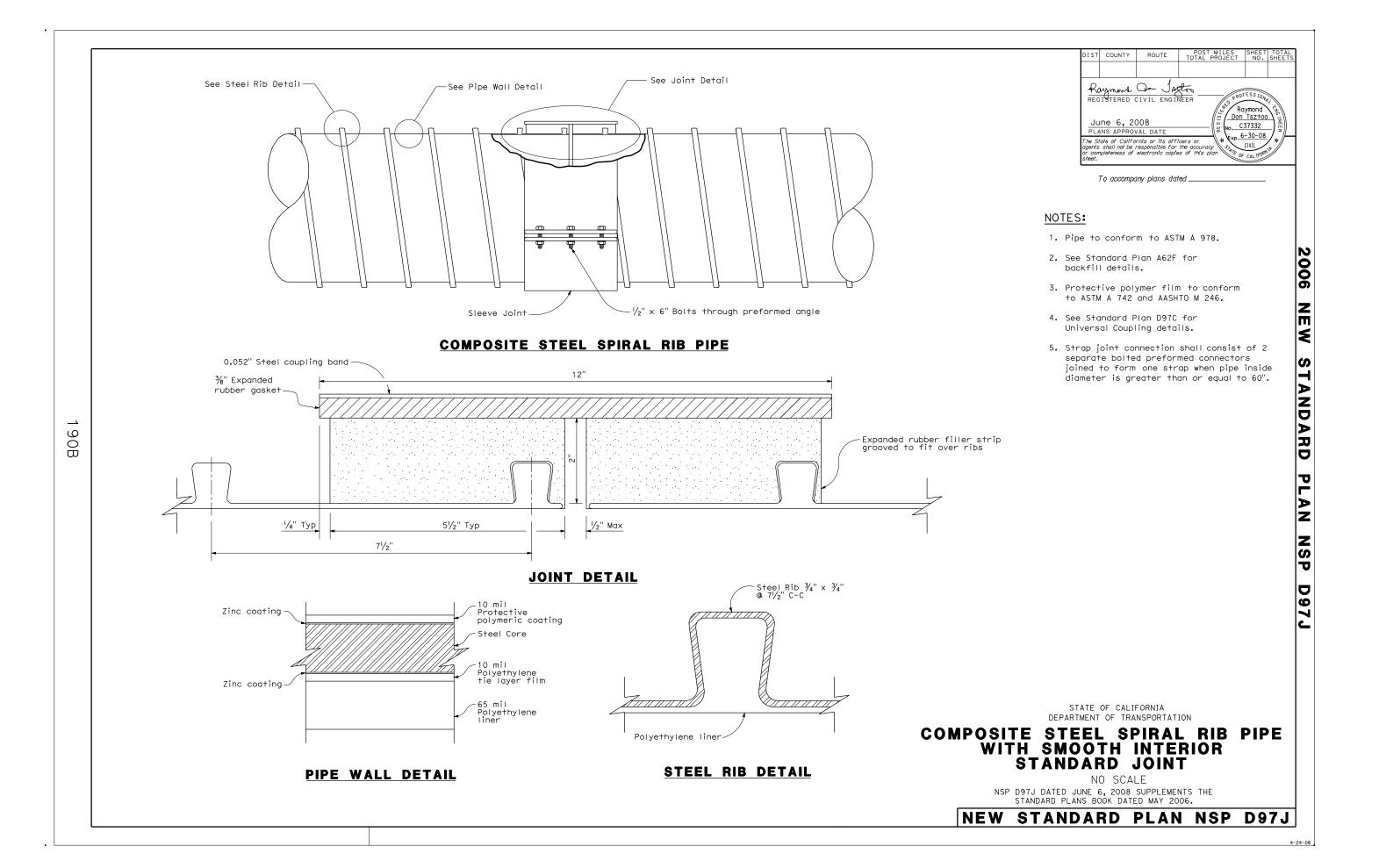
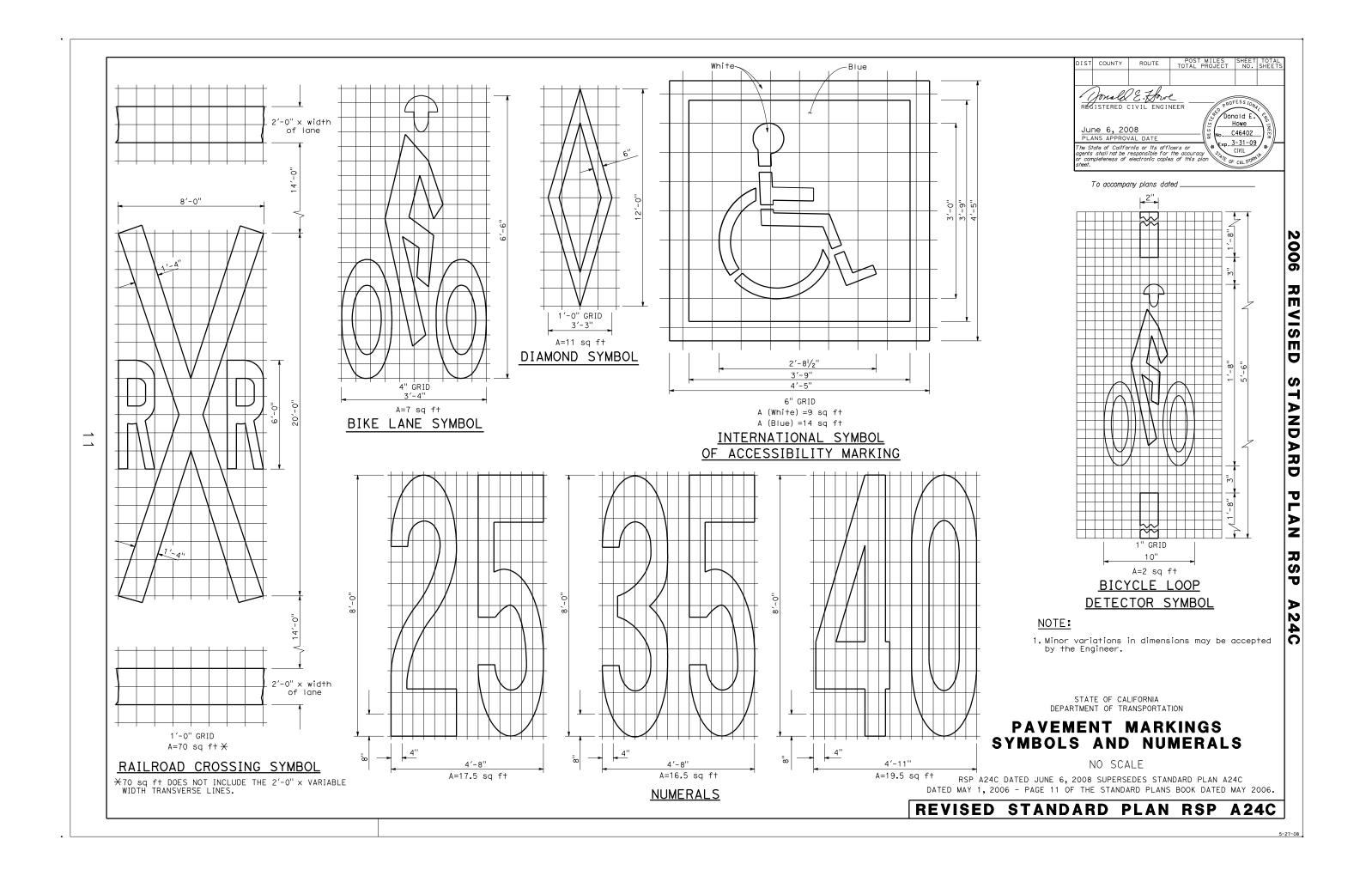


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POST MILES TOTAL PROJECT

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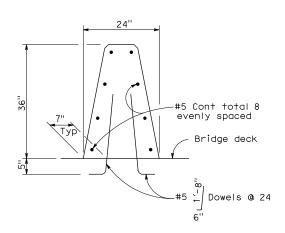
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Barrier marker (cemented to barrier) Concrete barrier in median

CONCRETE BARRIER TYPE 60 DELINEATION

See Notes 7 and 8



CONCRETE BARRIER TYPE 60A

Details similar to Type 60 except as noted.

CONCRETE BARRIER TYPE 60

Conc barrier

61/4"

NOTES:

Max roadway offset 11/2"

See Note 6

1. See Standard Plan A76B for details of Concrete Barrier Type 60 end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60S.

¾" Chamfer or

 $\frac{1}{2}$ " R (+ypical)

#5 Cont total 8, evenly spaced

Pymt or well

compacted base

- 2. See Standard Plan A76C for Concrete Barrier Type 60 transitions at bridge column and sign pedestals.
- 3. Where glare screen is required on Concrete Barrier Type 60, use Concrete Barrier Type 60G.
- 4. Where the concrete barrier is added to the face of existing concrete structure, match existing weep holes.
- 5. Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or $\frac{1}{2}$ minimum.
- 6. Where roadway offset is greater than $1\frac{1}{2}$, see Concrete Barrier Type 60C.
- 7. Barrier delineation to be used when required by the Special Provisions.
- 8. Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edgeline pavement delineation.
- 9. Reinforcing stirrup not required for roadway offsets less than 1'-0".
- 10. For roadway surfaces offset greater than $1\frac{1}{2}$ " to 3", no rebars required. For roadway surfaces offset greater than 3" to 8" use two #4 rebars at 3" above the lower roadway surface. For roadway surfaces offset greater than 8" to 12", use two #4 rebars at 3" above the lower roadway surface and two #4 rebars at 8" above the lower roadway surface. For roadway surfaces offset greater than 12" to 36", use two #4 rebars at 3" above the lower roadway surface and two #4 rebars at every 8" increment vertical spacing above the first two #4 rebars.

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CONCRETE BARRIER TYPE 60

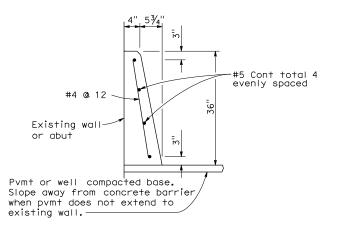
NO SCALE

RSP A76A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A76A DATED MAY 1, 2006 - PAGE 29 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A76A

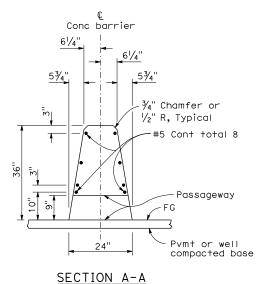
CONCRETE BARRIER TYPE 60C

Details similar to Type 60 except as noted. Concrete barrier end anchor when necessary. 36" roadway surfaces offset shown.



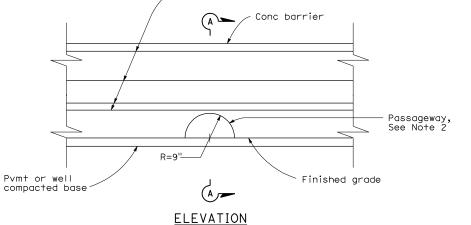
CONCRETE BARRIER TYPE 60D

To accompany plans dated _



(Concrete Barrier Type 60 shown)

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(See Notes 1 and 3)

#5 Cont

NOTES:

- Type S Passageway typically used for crossing of small size animals.
- 2. At the option of the Contractor, the passageway opening shall be constructed by using either the cast-in-place method, with the allowance of the form to be left in place, or once the barrier is constructed, drilling through the barrier to create the opening.
- See Revised Standard Plan RSP A76A for typical details of Concrete Barrier Type 60.

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CONCRETE BARRIER WILDLIFE PASSAGEWAY (TYPE S)

NO SCALE

RSP A76J DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A76J DATED MAY 1, 2006 - PAGE 38 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A76J

REVISED

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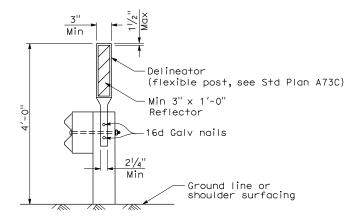
L9,

To accompany plans dated.

NOTES:

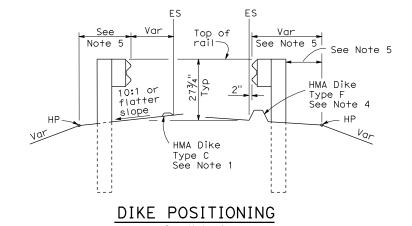
- When necessary to place dike in front of face of guard railing, only Type C dike may be used. For dike details, see Standard Plan A87B.
- 2. For standard railing post embedment, see Standard Plans A77C3.
- 3. Guard railing delineation to be used where shown on the Project Plans.
- 4. When dike or curb is placed under guard railing, the maximum height of the dike or curb shall be 4".

 Mountable dike should not be used. For dike and curb details, see Revised Standard Plans RSP A87A and Standard Plan A87B.
- 5. For details of typical distance between the face of rail and hinge point, see Standard Plan A77C3.



GUARD RAILING DELINEATION

See Note 3



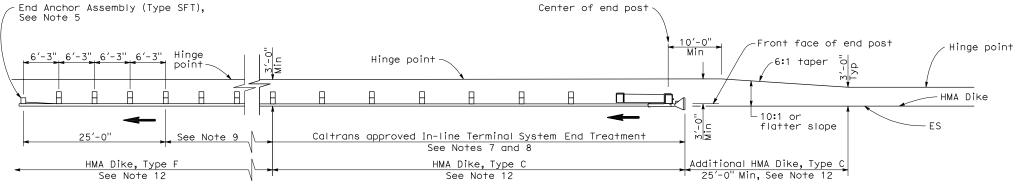
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL RAILING DELINEATION AND DIKE POSITIONING DETAILS

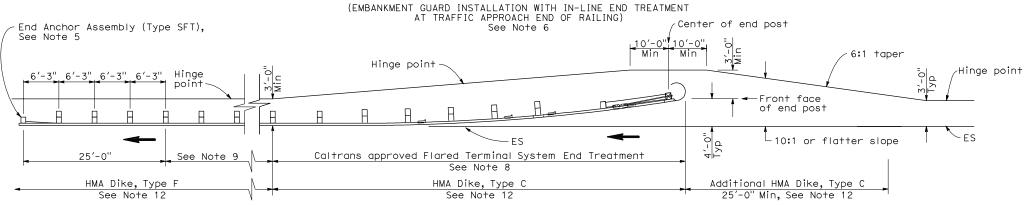
NO SCALE

RSP A77C4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77C4 DATED MAY 1, 2006 - PAGE 47 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77C4



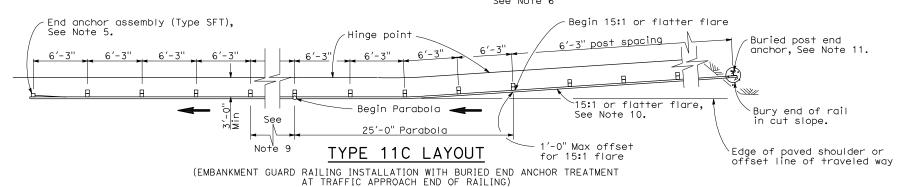
TYPE 11A LAYOUT



TYPE 11B LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)

See Note 6



See Notes 6 and 12

NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1, and A77C2.
- 2. Guard rail post spacing to be $6^\prime\text{--}3^{\prime\prime}$ center to center, except as otherwise noted.
- 3. Except as noted, line posts are $6" \times 8" \times 6'-0"$ wood with $6" \times 8" \times 1'-2"$ wood blocks. W6 \times 9 steel posts, 6'-0" in length, with $6" \times 8" \times 1'-2"$ notched wood blocks or recycled plastic blocks may be used for $6" \times 8" \times 6'-0"$ wood post with $6" \times 8" \times 1'-2"$ wood blocks where applicable and when specified.
- 4. Direction of adjacent traffic indicated by \longrightarrow .
- 5. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- 6. Layout Types 11A, 11B or 11C are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for only one direction of traffic.

- 7. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- 8. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 9. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 10. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- 11. For details of the buried post end anchor used with Type 11C Layout, see Standard Plan A77I2.
- 12. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

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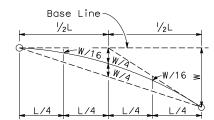
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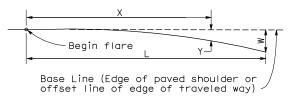
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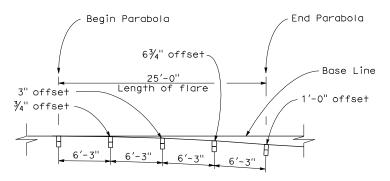
To accompany plans dated _



TYPICAL PARABOLIC LAYOUT



PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS
FOR 1 FOOT MAX END OFFSET

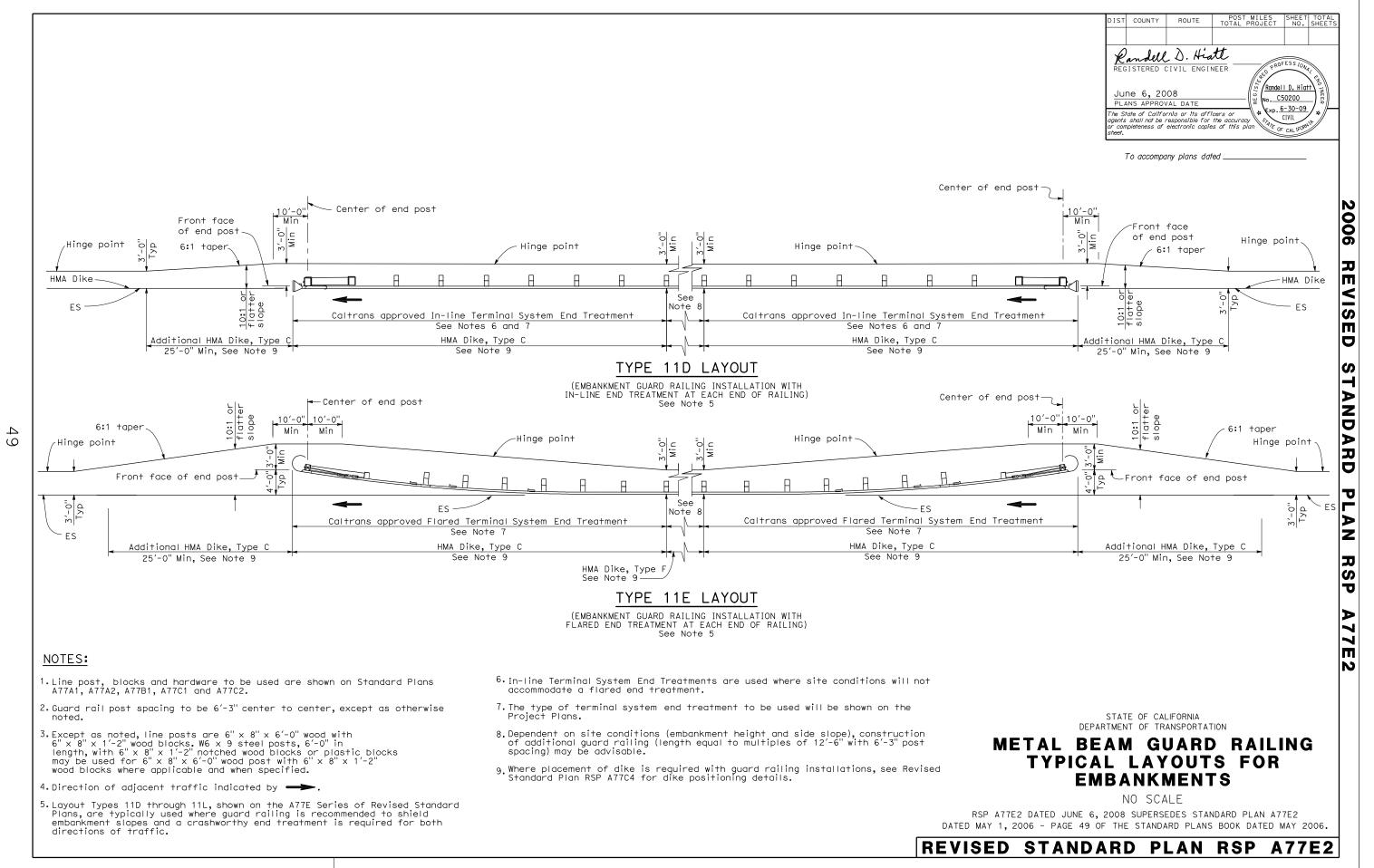
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

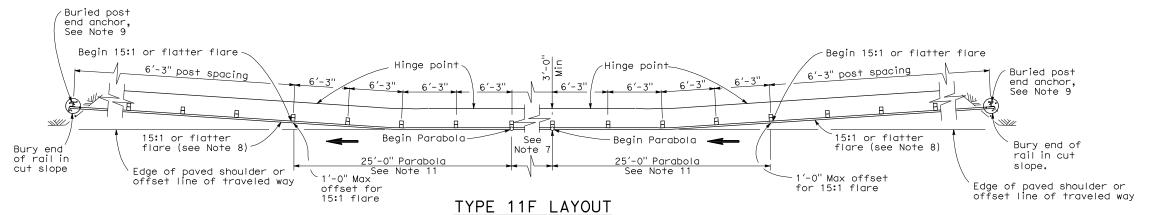
RSP A77E1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E1
DATED MAY 1, 2006 - PAGE 48 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E1

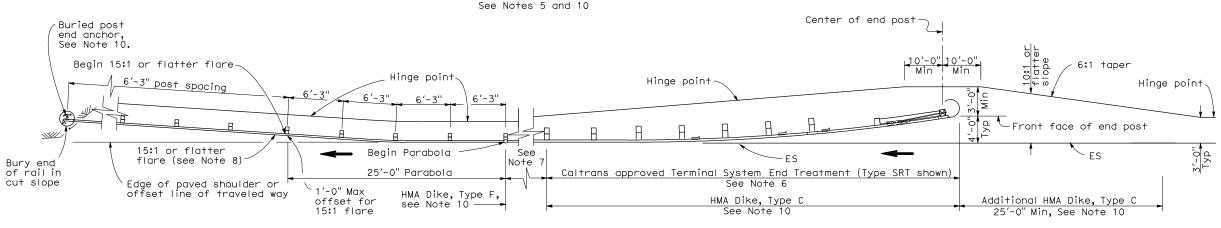


IST COUNTY ROUTE Randell D. Hiatt Randell D. Hiat June 6, 2008 .__C50200 PLANS APPROVAL DATE Exp. 6-30-09 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this pl

To accompany plans dated.



(EMBANKMENT GUARD RAILING INSTALLATION WITH A BURIED END ANCHOR TREATMENT AT EACH END OF RAILING)



TYPE 11G LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AND A BURIED END ANCHOR TREATMENT AT THE ENDS OF RAILING) See Notes 5 and 10

NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard rail post spacing to be 6'-3" center to center, except as otherwise
- 3. Except as noted, line posts are $6" \times 8" \times 6'-0"$ wood with $6" \times 8" \times 1'-2"$ wood blocks. W6 \times 9 steel posts, 6'-0" in length, with $6" \times 8" \times 1'-2"$ notched wood blocks or plastic blocks may be used for $6" \times 8" \times 6'-0"$ wood post with $6" \times 8" \times 1'-2"$ wood blocks where applicable and when specified.
- 4. Direction of adjacent traffic indicated by
- Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.

- 6. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 7. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 8. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- 9. For details of the buried post end anchor used with Type 11F and 11G Layouts, see Standard Plan A77I2.
- 5. Layout Types 11D through 11L, shown on the A77E Series of Revised Standard 10. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
 - 11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR **EMBANKMENTS**

NO SCALE

RSP A77E3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E3 DATED MAY 1, 2006 - PAGE 50 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E3

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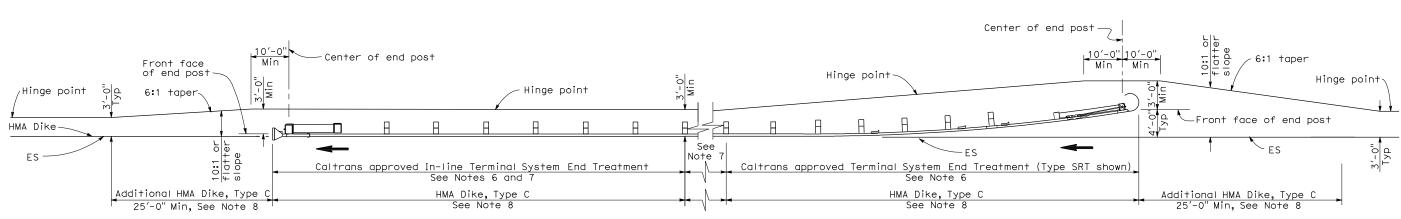
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IST COUNTY



TYPE 11H LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AND AN IN-LINE TREATMENT AT THE ENDS OF RAILING) See Notes 5 and 8

NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard rail post spacing to be $6^\prime\text{--}3^{\prime\prime}$ center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" \times 8" \times 6'-0" wood with 6" \times 8" \times 1'-2" wood blocks. W6 \times 9 steel posts, 6'-0" in length, with 6" \times 8" \times 1'-2" notched wood blocks or plastic blocks may be used for 6" \times 8" \times 6'-0" wood post with 6" \times 8" \times 1'-2" wood blocks where applicable and when specified.
- 4. Direction of adjacent traffic indicated by ----.

- 5. Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- 6. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 7. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 8. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

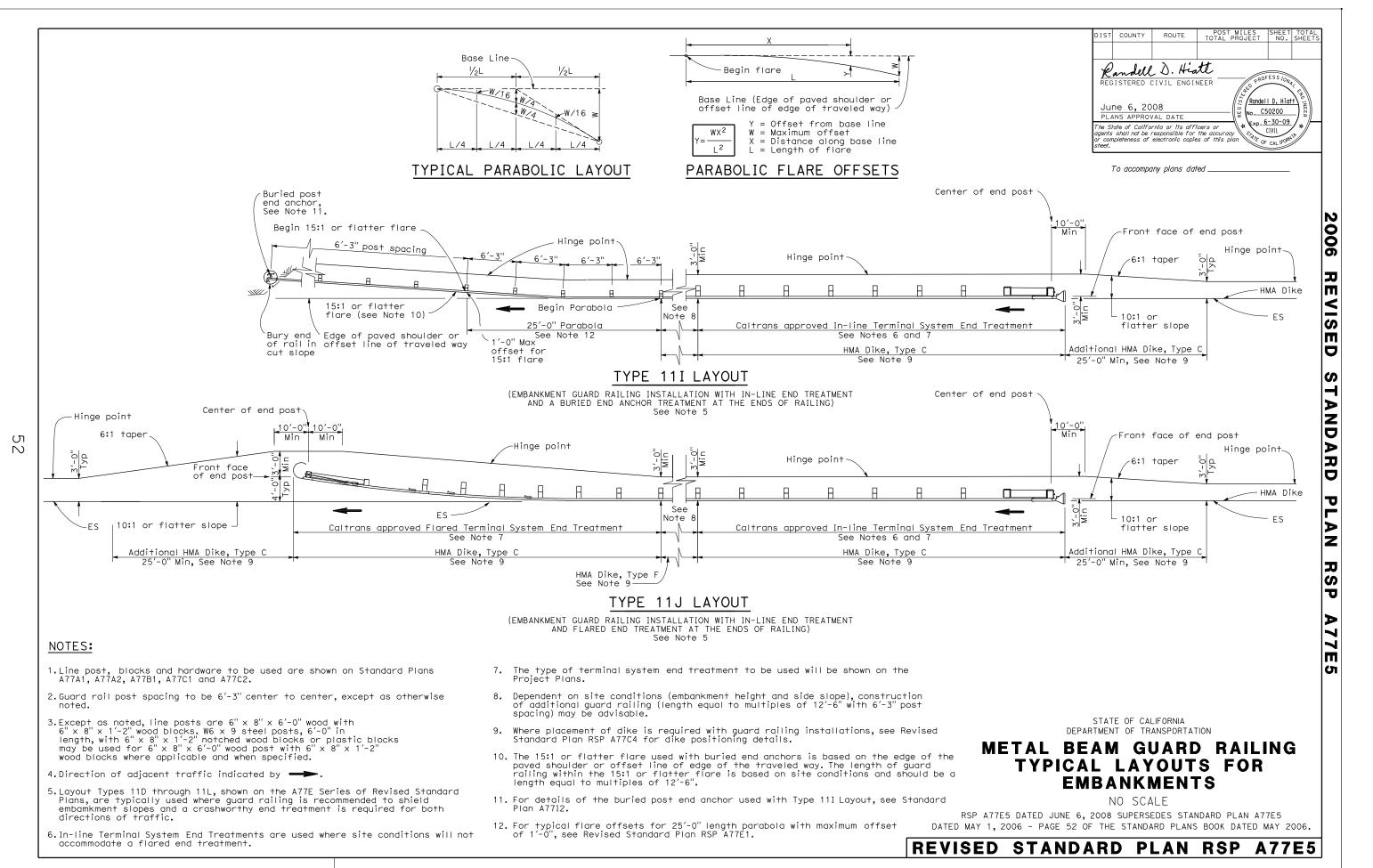
STATE OF CALIFORNIA
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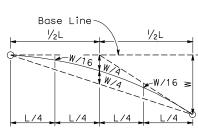
METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77E4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E4
DATED MAY 1, 2006 - PAGE 51 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E4





Base Line (Edge of paved shoulder or offset line of edge of traveled way) WX² L^2

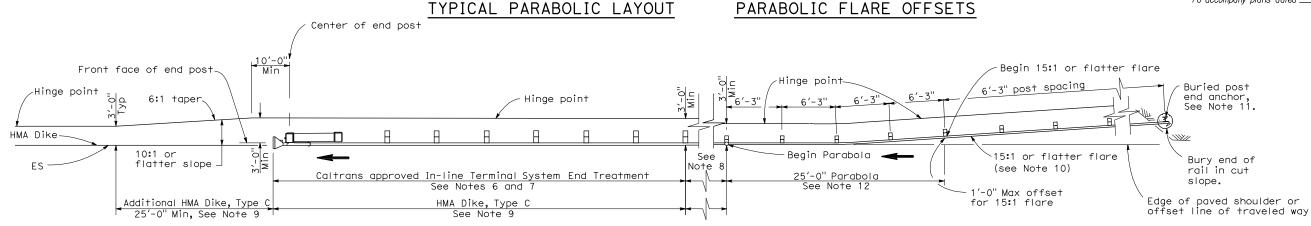
X = Distance along base line L = Length of flare

Begin flare

PARABOLIC FLARE OFFSETS

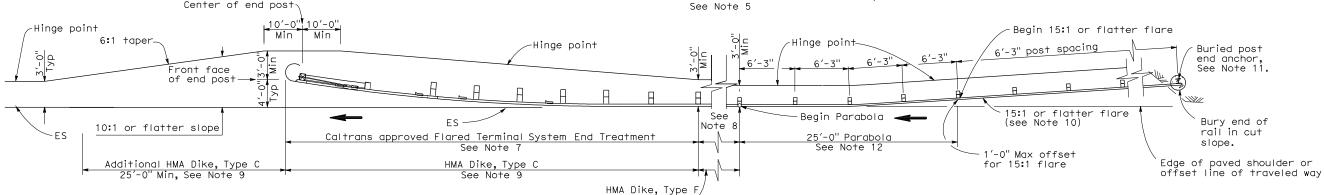
W = Maximum offset

/ = Offset from base line



TYPE 11K LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH A BURIED END ANCHOR TREATMENT AND AN IN-LINE END TREATMENT AT THE ENDS OF RAILING) See Note 5



See Note 9

TYPE 11L LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH A BURIED END ANCHOR TREATMENT AND A FLARED END TREATMENT AT THE ENDS OF RAILING) See Note 5

NOTES:

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" x 8" x 6'-0" wood with $6"\times8"\times1'-2"$ wood blocks. W6 \times 9 steel posts, 6'-0" in length, with $6"\times8"\times1'-2"$ notched wood blocks or plastic blocks may be used for $6"\times8"\times6'-0"$ wood post with $6"\times8"\times1'-2"$ wood blocks where applicable and when specified.
- 4. Direction of adjacent traffic indicated by
- 5. Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embamkment slopes and a crashworthy end treatment is required for both directions of traffic.
- 6.In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.

- 7. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 8. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 9. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- 10. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- 11. For details of the buried post end anchor used with Type 11K and 11L Layouts, see Standard Plan A77I2.
- 12. For typical flare offsets for 25′-0″ length parabola with maximum offset of 1′-0″, see Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR **EMBANKMENTS**

NO SCALE

RSP A77E6 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E6 DATED MAY 1, 2006 - PAGE 53 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E6

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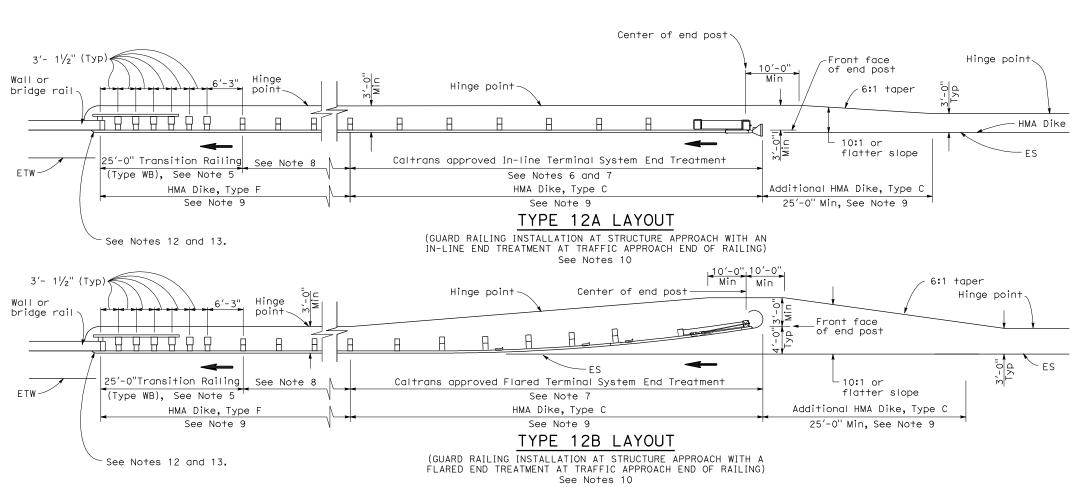
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To accompany plans dated .

NOTES:

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard rail post spacing to be $6^\prime\text{--}3^{\prime\prime}$ center to center, except as otherwise noted.
- 3. Except as noted, line posts are $6" \times 8" \times 6'-0"$ wood with $6" \times 8" \times 1'-2"$ wood blocks. W6 x 9 steel posts, 6'-0" in length, with $6" \times 8" \times 1'-2"$ notched wood blocks or plastic blocks may be used for $6" \times 8" \times 6'-0"$ wood posts with $6" \times 8" \times 1'-2"$ wood blocks where applicable and when specified.
- 4. Direction of adjacent traffic indicated by
- 5. For Transition Railing (Type WB) details for Types 12A and 12B Layouts, see Standard Plan A77J4.
- 6. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- 7. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 8. Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12′-6" with 6′-3" post spacing) between the transition railing and end treatment.

- 9. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- 10. Type 12A or Type 12B Layouts are typically used:
 - a. To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - b. To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - c. To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
 - d. To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- 11. See Revised Standard Plan RSP A77F3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.

- 12. For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77J1 and RSP A77J2 and Connection Detail FF on Standard Plans A77K1 and A77K2.
- 13. For additional details of a typical connection to walls or abutments, see Standard Plan A77J3.

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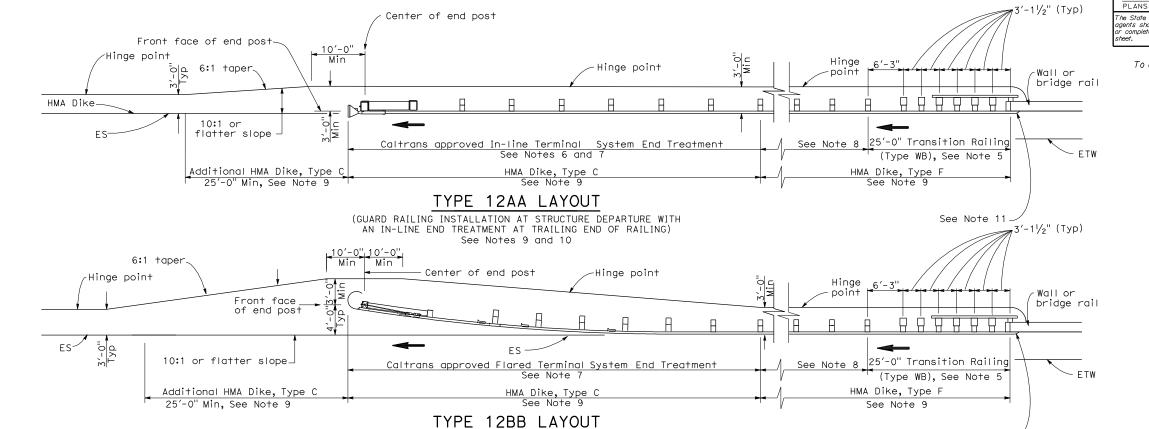
METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77F1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77F1
DATED MAY 1, 2006 - PAGE 54 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77F1

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(GUARD RAILING INSTALLATION AT STRUCTURE DEPARTURE WITH

A FLARED END TREATMENT AT TRAILING END OF RAILING)
See Notes 9 and 10

NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" \times 8" \times 6'-0" wood with 6" \times 8" \times 1'-2" wood blocks. W6 \times 9 steel posts, 6'-0" in length, with 6" \times 8" \times 1-2" notched wood blocks or notched recycled plastic blocks may be used for 6" \times 8" \times 6'-0" wood posts with 6" \times 8" \times 1'-2" wood blocks where applicable and when specified.
- 4. Direction of adjacent traffic indicated by ----.
- For Transition Railing (Type WB) details for Types 12AA and 12BB Layouts, see Standard Plan A77J4.
- 6. In-line Terminal System Treatments are used where site conditions will not accommodate a flared end treatment.
- 7. The type of terminal system to be used will be shown on the Project Plans.

- 8. Dependent on site conditions (embankment height, side slopes, other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatments.
- 9. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- 10. Type 12AA or Type 12BB Layouts are typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- 11. For additional details of typical connections to bridge rail, see Connection Detail CC on Revised Standard Plan RSP A77J2 and Connection Detail HH on Standard Plans A77K2.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

See Note 11

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR STRUCTURE DEPARTURE

NO SCALE

RSP A77F4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77F4
DATED MAY 1, 2006 - PAGE 57 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77F4

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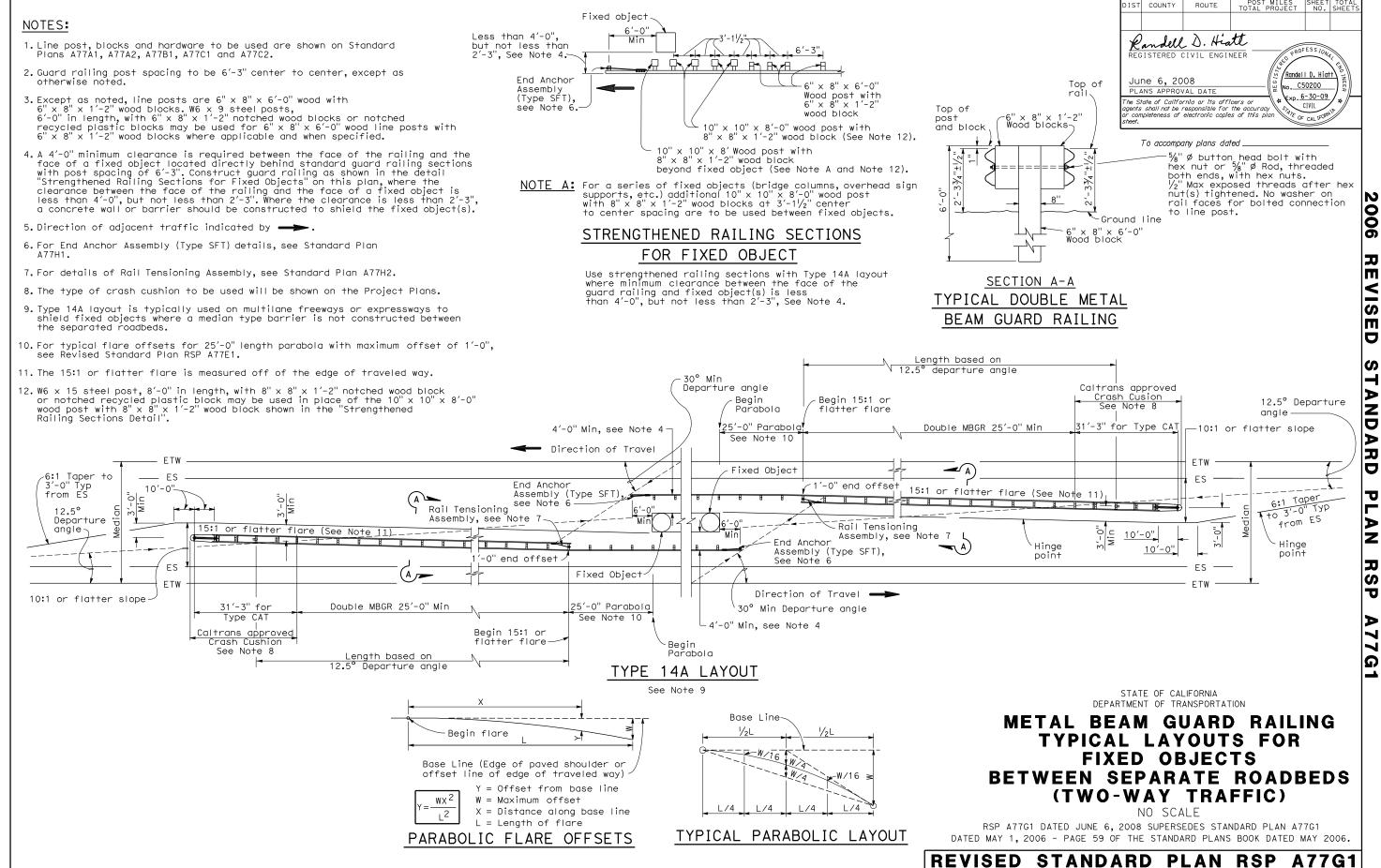
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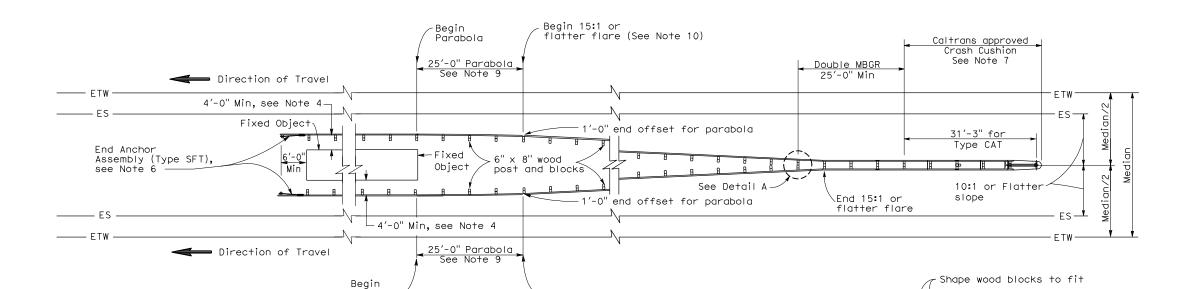
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- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are $6'' \times 8'' \times 6'-0''$ wood with $6'' \times 8'' \times 1'-2''$ wood blocks. W6 x 9 steel posts, 6'-0'' in length, with $6'' \times 8'' \times 1'-2''$ notched wood blocks or notched recycled plastic blocks may be used for $6'' \times 8'' \times 6'-0''$ wood line posts with $6'' \times 8'' \times 1'-2''$ wood blocks where applicable and when specified.
- 4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing section with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. Direction of adjacent traffic indicated by \longrightarrow .

- 6. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- 7. Type of crash cushion to be used will be shown on the Project Plans.
- 8. Type 15A layout is typically used on multilane freeways or expressways to shield fixed objects in the area between separated one-way roadbeds.
- 9. For typical flare offsets for 25′-0″ length parabola with maximum offset of 1′-0″, see Revised Standard Plan RSP A77E1.
- 10. The 15:1 or flatter flare is measured off of the edge of the traveled way.
- 11. W6 x 15 steel post, 8'-0" in length, with $8" \times 8" \times 1'$ -2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with $8" \times 8" \times 1'$ -2" wood block shown in the "Strengthened Railing Sections Detail".

	DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL			
Randell D. Hiatt REGISTERED CIVIL ENGINEER June 6, 2008 PLANS APPROVAL DATE ROGERSS 10M/4/ S Randell D. Hiatt No. C50200 Exp. 6-30-09									
	agents	shall not be i	rnia or its offi responsible for electronic copie	cers or \\ \\ \\ \\ \	CIVIL CAL IFORM	\\ \psi\			

To accompany plans dated ____



TYPE 15A LAYOUT

Begin 15:1 or

flatter flare (See Note 10)

See Note 9

Parabola

Begin flare

WX

Base Line (Edge of paved shoulder or

offset line of edge of traveled way)

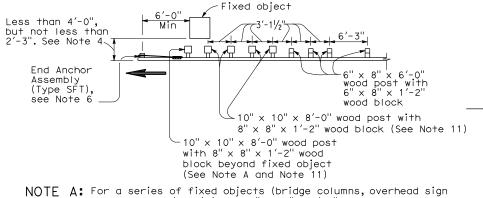
W = Maximum offset

L = Length of flare

PARABOLIC FLARE OFFSETS

Y = Offset from base line

X = Distance along base line

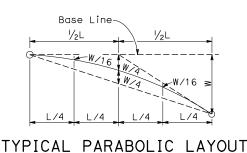


Supports, etc.) additional 10" \times 10" \times 8'-0" wood post with 8" \times 8" \times 1'-2" wood blocks at 3'-1\sqrt{2}" center to center spacing are to be used between fixed objects.

STRENGTHENED RAILING SECTIONS

FOR FIXED OBJECT

Use strengthened railing sections with Type 15A layout where minimum clearance between the face of the guard railing and the fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DETAIL A

6" x 8" wood block

x 8" wood post

6" x 8" wood block

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR FIXED OBJECTS BETWEEN SEPARATE ROADBEDS (ONE-WAY TRAFFIC)

NO SCALE

RSP A77G2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G2 DATED MAY 1, 2006 - PAGE 60 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G2

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PLAN RSP A77G2

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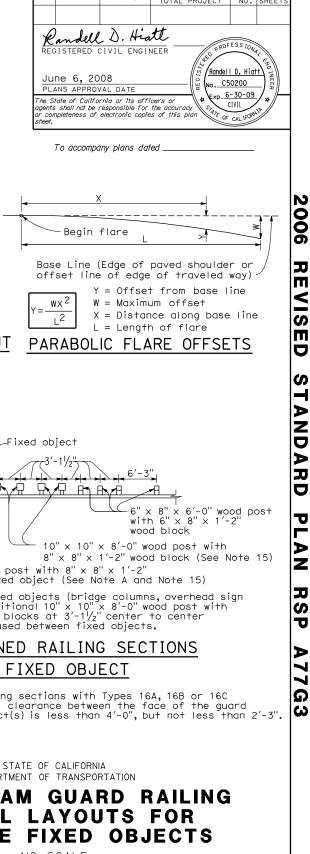
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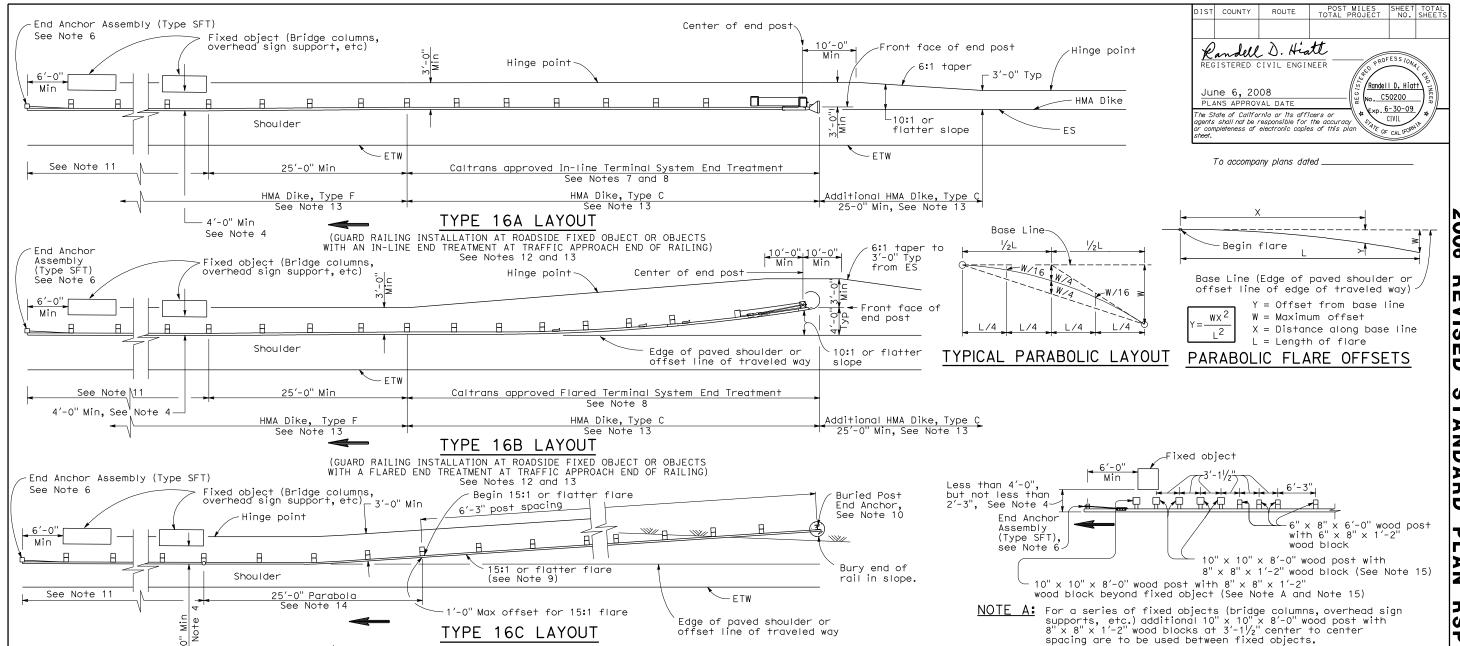
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- 1. Line post, blocks and hardware to be used are shown on Revised Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" x 8" x 6'-0" wood with \times 8" \times 1'-2" wood blocks. W6 \times 9 steel posts, 6'-0" in length, with 6" \times 8" \times 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" \times 8" \times 6'-0" wood line posts with 6" \times 8" \times 1'-2" wood blocks where applicable and when specified.
- 4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", accordate wall or barries should be constructed to chief the fixed object. a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. Direction of adjacent traffic indicated by

0

NOTES:

- 6. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- 7. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- 8. The type of terminal system to be used will be shown on the Project Plans.

- 9. The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- 10. For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77I2.
- 11. As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12′-6". Post spacing at 6′-3" except as specified in Note 4.
- 12. Layout Types 16A, 16B or 16C are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.
- 13. Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- 14. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)

See Notes 12 and 13

15. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

Use strengthened railing sections with Types 16A, 16B or 16C Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4

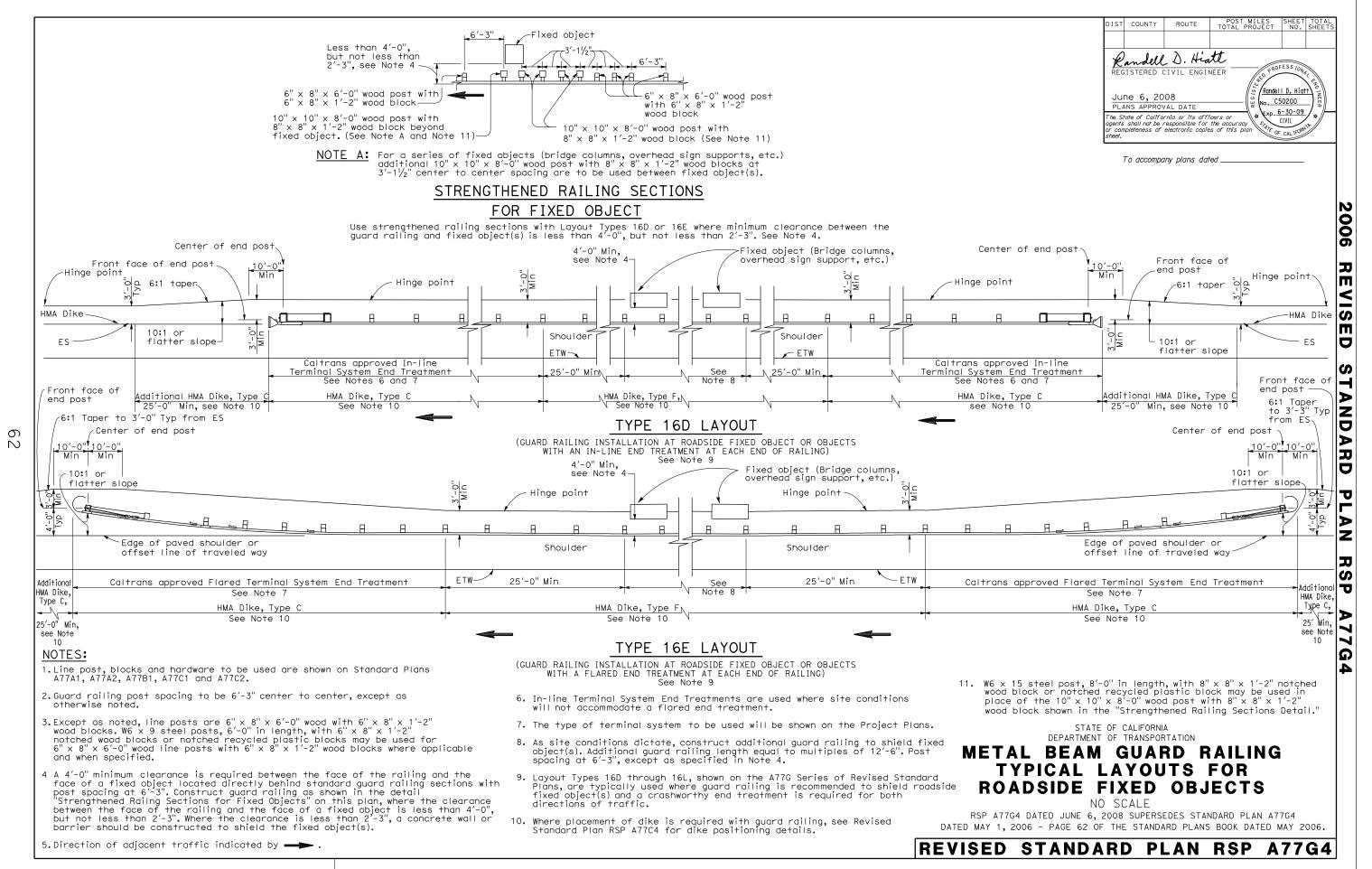
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

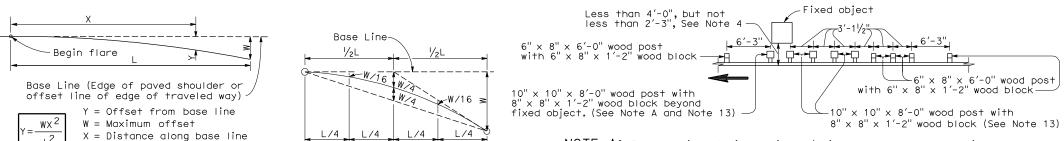
NO SCALE

RSP A77G3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G3 DATED MAY 1, 2006 - PAGE 61 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G3







TYPICAL PARABOLIC LAYOUT

NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at $3'-1\frac{1}{2}$ " center to center spacing are to be used between fixed object(s).

POST MILES SHEET TOTAL PROJECT SHOWN SHEETS

REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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State or California or its officers or specific shall not be responsible for the accuracy or completeness of electronic copies of this plan

POST MILES

SHEET TOTAL

NO. SHEETS

Randell D. Hight

Registers

Randell D. Hight

Registers

Roy California

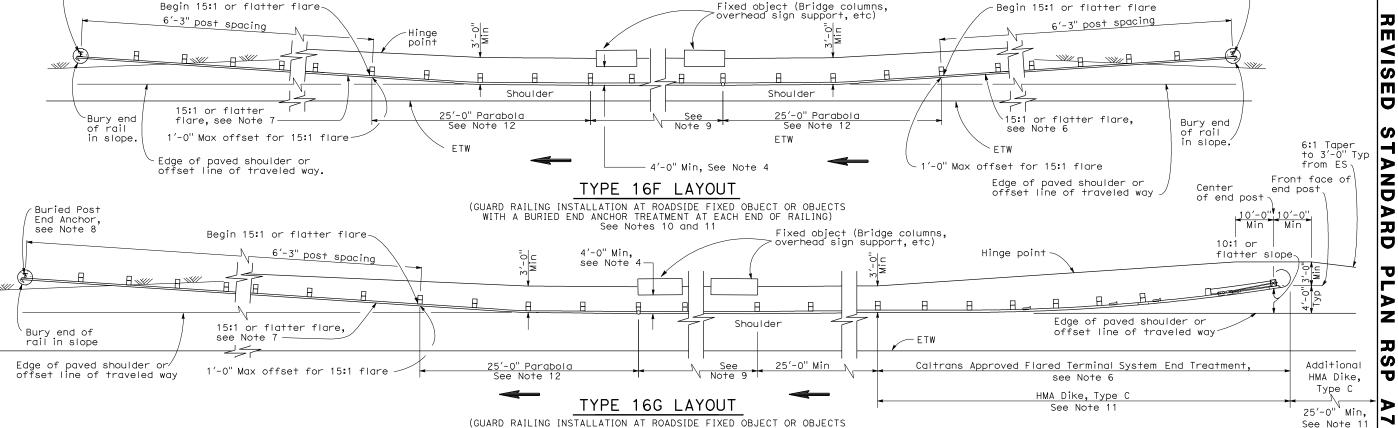
Buried Post End Anchor,

To accompany plans dated ___

see Note 8

STRENGTHENED RAILING SECTIONS

FOR FIXED OBJECT Use strengthened railing sections with Layout Types 16F or 16G where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.

L = Length of flare

Buried Post End Anchor, see Note 8

PARABOLIC FLARE OFFSETS

- 2. Guard railing post spacing to be $6^\prime\text{-}3^{\prime\prime}$ center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" \times 8" \times 6'-0" wood with 6" \times 8" \times 1'-2" wood blocks. W6 \times 9 steel posts, 6'-0" in length, with 8" \times 8" \times 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" \times 8" \times 6'-0" wood posts with 6" \times 8" \times 1'-2" wood blocks where applicable and when specified.
- 4 A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. Direction of adjacent traffic indicated by ____.

- WITH A FLARED END TREATMENT AND A BURIED END ANCHOR TREATMENT AT THE ENDS OF RAILING)
 See Notes 10 and 11
 - 6. The type of terminal system to be used will be shown on the Project Plans.
 - 7. The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
 - 8. For details of the Buried Post End Anchor details, see Standard Plan A77I2.
 - 9. As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12′-6". Post spacing at 6′-3", except as specified in Note 4.
 - 10. Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used on highways where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
 - 11. Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.

- 12. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
- 13. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77G5 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G5
DATED MAY 1, 2006 - PAGE 63 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G5

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To accompany plans dated.

Randell D. Hiat

__C50200

Exp. 6-30-09

CIVIL

Front face of end post

900

ROUTE

Randell D. Hiatt

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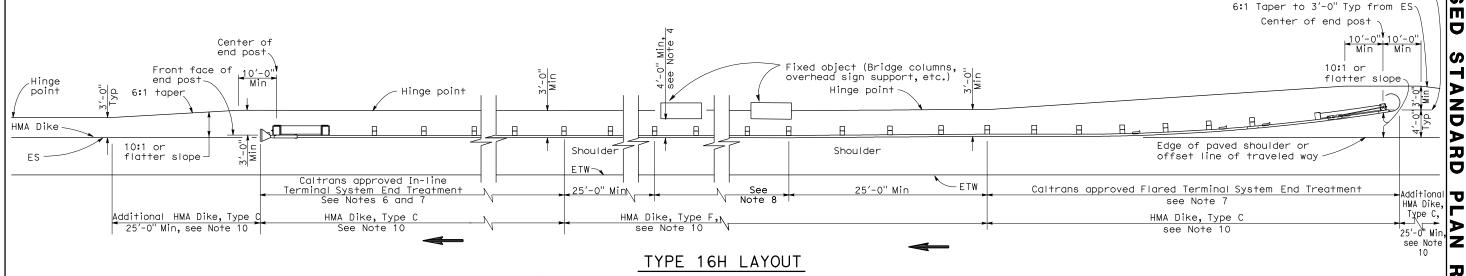
IST COUNTY

June 6, 2008

PLANS APPROVAL DATE

FOR FIXED OBJECT

Use strengthened railing sections with Layout Type 16H where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS

NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- 2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are $6" \times 8" \times 6'-0"$ wood with $6" \times 8" \times 1'-2"$ wood blocks. W6 x 9 steel posts, 6'-0" in length, with $6" \times 8" \times 1'-2"$ notched wood blocks or notched recycled plastic blocks may be used for $6" \times 8" \times 6'-0"$ wood posts with 6" \times 8" \times 1⁷-2" wood blocks where applicable and when specified.
- 4 A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. Direction of adjacent traffic indicated by -----

- 6. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- 7. The type of terminal system to be used will be shown on the Project Plans.
- 8. As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.

WITH A FLARED END TREATMENT AND AN IN-LINE TREATMENT AT THE ENDS OF RAILING)

See Note 9

- 9. Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- 10. Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- 11. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

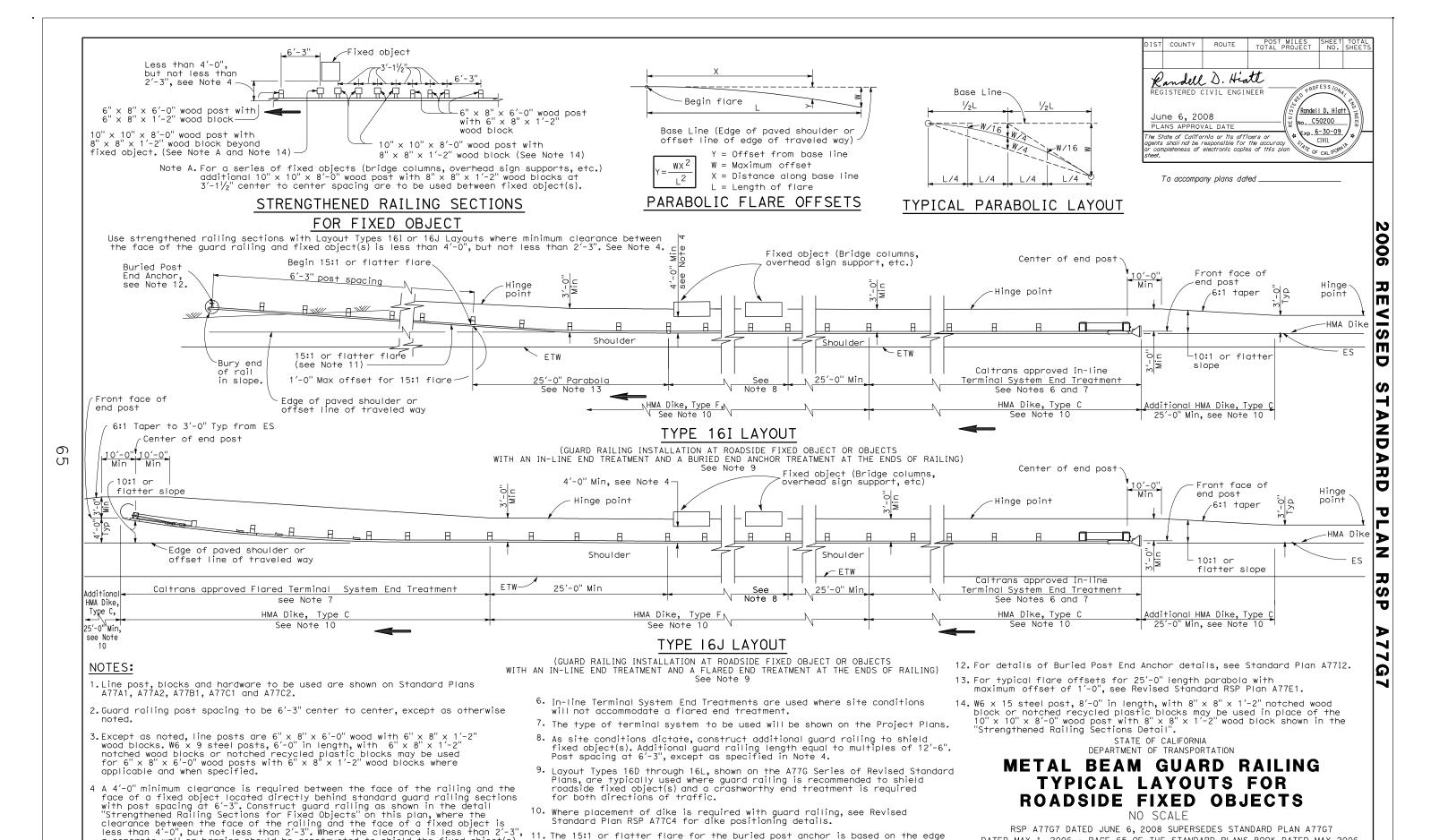
NO SCALE

RSP A77G6 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G6 DATED MAY 1, 2006 - PAGE 64 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G6

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of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site

conditions and should be a length equal to multiples of 12'-6".

a concrete wall or barrier should be constructed to shield the fixed object(s).

5. Direction of adjacent traffic indicated by

DATED MAY 1, 2006 - PAGE 65 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G7

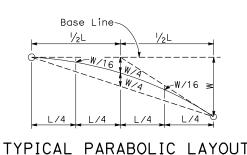
Note A. For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-11/2" center to center spacing are to be used between fixed object(s).

Base Line (Edge of paved shoulder or offset line of edge of traveled way) Y = Offset from base line

W = Maximum offset

X = Distance along base line

PARABOLIC FLARE OFFSETS



Registered civil engineer

June 6, 2008

PLANS APPROVAL DATE

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Sheef.

Buried Post End

ROUTE

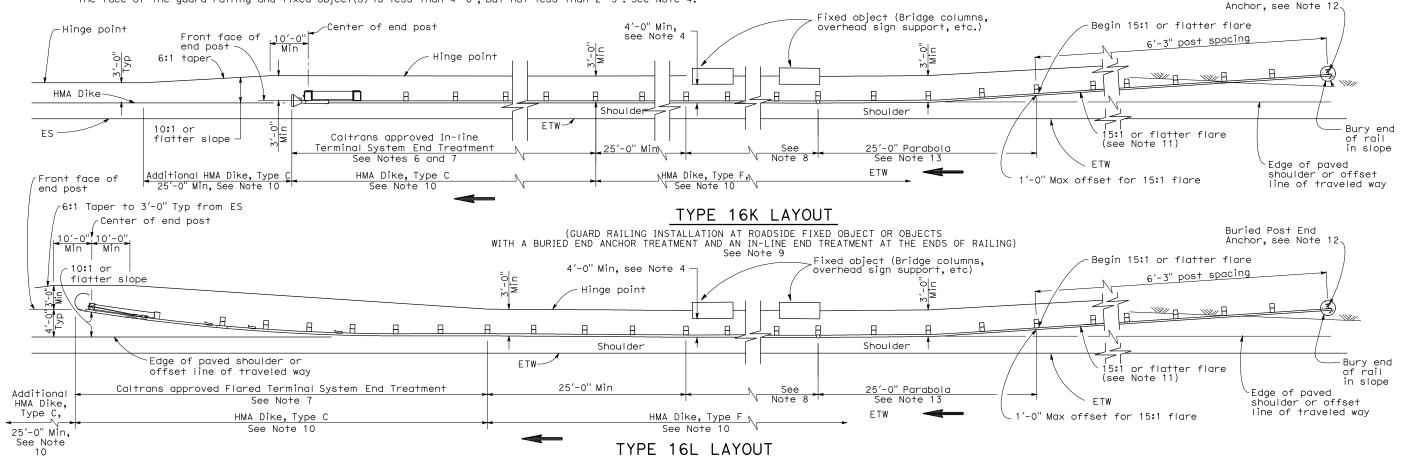
To accompany plans dated _

IST COUNTY

STRENGTHENED RAILING SECTIONS

FOR FIXED OBJECT

Use strengthened railing sections with Layout Types 16K or 16L Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are $6" \times 8" \times 6'-0"$ wood with $6" \times 8" \times 1'-2"$ wood blocks. W6 x 9 steel posts, 6'-0" in length, with $6" \times 8" \times 1'-2"$ notched wood blocks or notched recycled plastic blocks may be used for $6" \times 8" \times 6'-0"$ wood posts with $6" \times 8" \times 1'-2"$ wood blocks where applicable and when specified.
- 4 A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. Direction of adjacent traffic indicated by

- (GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AND A FLARED END TREATMENT AT THE ENDS OF RAILING)

 See Note 9
 - In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
 - 7. The type of terminal system to be used will be shown on the Project Plans.
 - 8. As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
 - 9. Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
 - 10. Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
 - 11. The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".

- 12. For details of Buried Post End Anchor details, see Standard Plan A77I2.
- 13. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard RSP Plan A77E1.
- 14. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

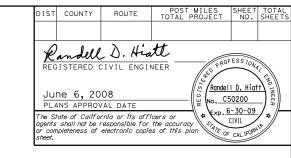
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77G8 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G8 DATED MAY 1, 2006 - PAGE 66 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G8



To accompany plans dated.

NOTES:

- See Revised Standard Plan RSP A77J2 for additional connection details to bridges without sidewalks.
- 2. Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
- 3. Direction of adjacent traffic indicated by
- 4. For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
- 5. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Revised Standard Plan RSP A77F3.
- 6. For typical use of Connection Detail BB, see Layout Type 12D (structure departure railing connection) on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.
- 7. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail.
- 8. For details of End Cap (Type TC), see Standard Plan A77J4.
- See Standard Plan A77J4 for additional details regarding depth dimension for straight metal box spacer.

9. See dept

8" × 45%" × 1/4" P

see Detail B

Straight metal box spacer

8" × 45%" × 1/4" P

Weld 1"
long each corner

11/4" Holes

11/4" Holes

11/4" Holes

DETAIL A
STRAIGHT METAL BOX SPACER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

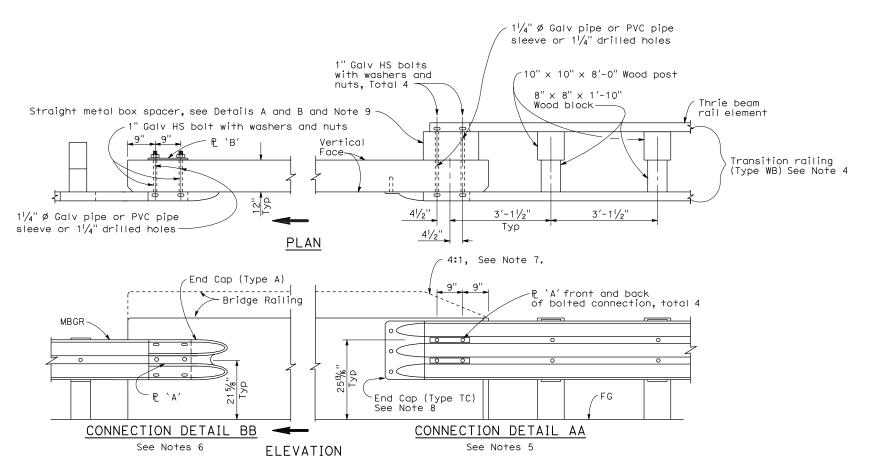
METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS DETAILS No.1

NO SCALE

RSP A77J1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77J1
DATED MAY 1, 2006 - PAGE 72 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77J1

12-10-07



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GUARD RAILING CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

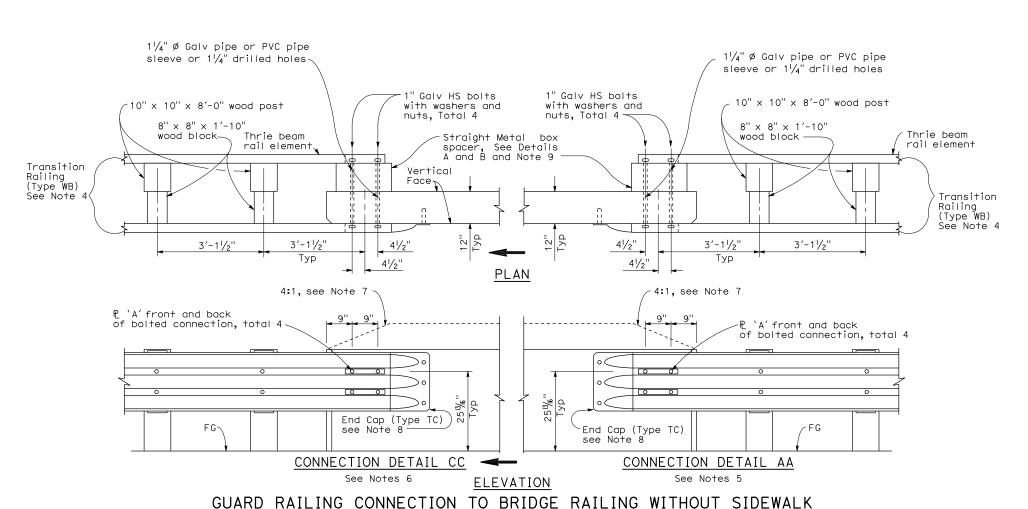
1'-4"

PLATE 'B'

(For backside of connection BB)

 \sim

PLATE ',



11/4" hole

PLATE

(For backside of connection BB)

PLATE 'A

POST MILES SHEET TOTAL NO. SHEETS

REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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SHEETS

Randell D. Hight
No. C50200

EXP. 6-30-09

CIVIL

STR. OF CALIFORNIA

OF CALIFORNIA

TOTAL PROJECT NO. SHEETS

TOTAL PROJECT NO. SHEETS

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TOTAL PROJECT NO

To accompany plans dated.

NOTES:

- See Revised Standard Plan RSP A77J1 for additional connection details to bridges without sidewalks.
- 2. Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
- 3. Direction of adjacent traffic indicated by
- 4. For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
- 5. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Revised Standard Plan RSP A77F3.
- 6. For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Standard Plan A77F4 and Layout Type 12CC on Standard Plan A77F5.
- 7. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
- 8. For details of End Cap (Type TC), see Standard Plans A77J4.
- See Standard Plans A77J4 for additional details regarding depth dimension for straight metal box spacer.

8" × 45%" × 1/4" P.

See Detail B

Straight metal box spacer

8" × 45%" × 1/4" P.

Weld 1" long each corner

11/4" Holes

11/4" Hole placement front and back panel

<u>DETAIL A</u>

STRAIGHT METAL BOX SPACER

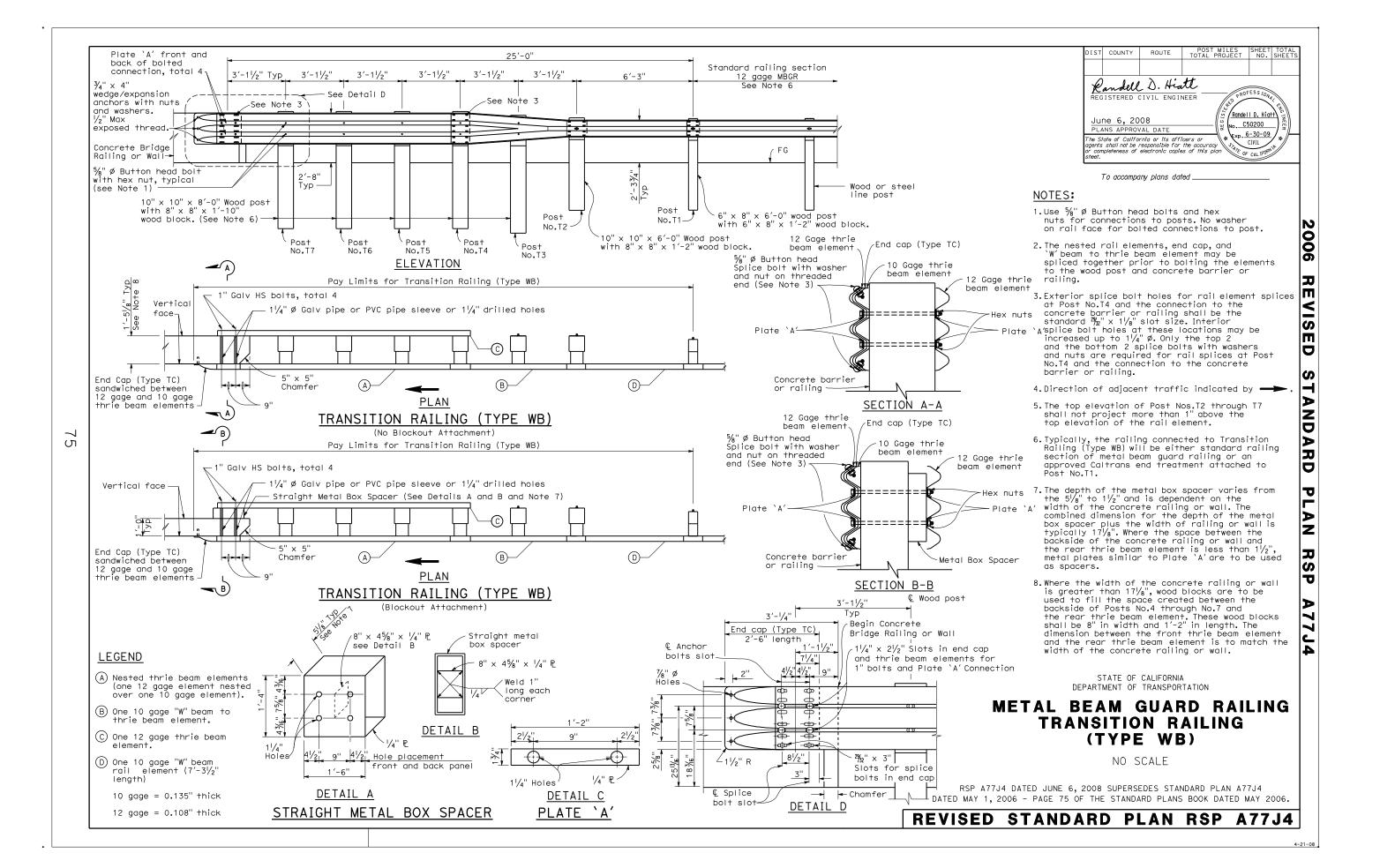
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

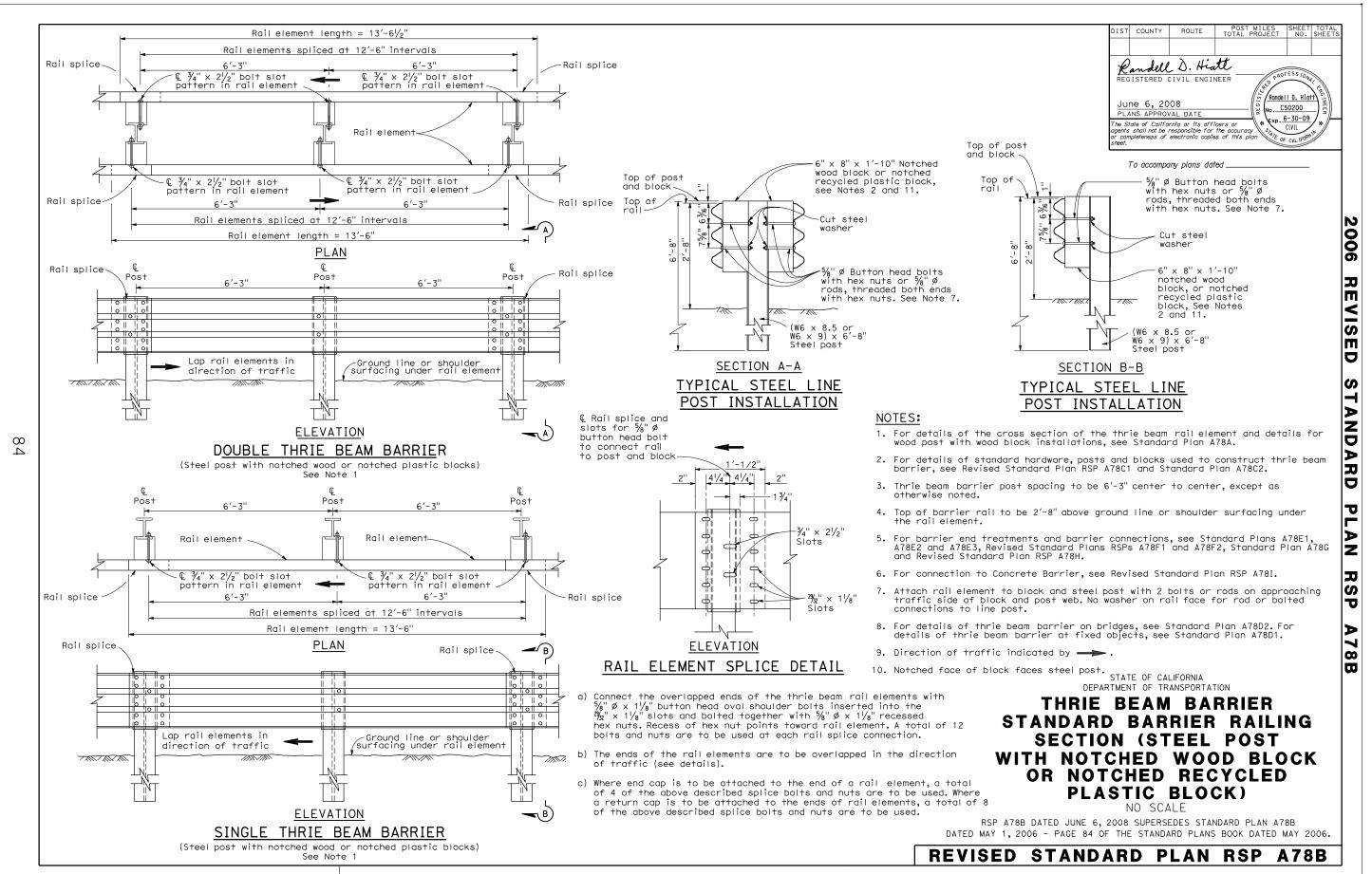
METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS DETAILS No.2

NO SCALE

RSP A77J2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77J2
DATED MAY 1, 2006 - PAGE 73 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77J2





5-14-08

0.108" Nominal

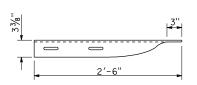
21/2" × 11/8"

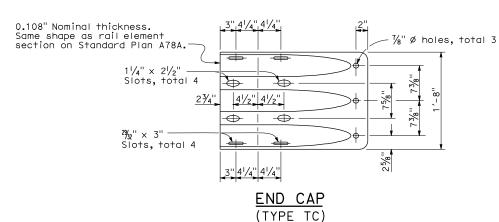
Slotted holes

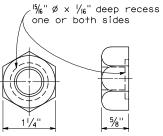
21/4" 81/2"

RETURN CAP

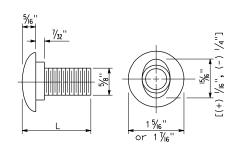
(TYPE TA)







5%" Ø RECESS NUT



5%" Ø BUTTON HEAD BOLT

L	THREAD LENGTH
1 1/4"	full thread length
2"	full thread length
91/2"	4" Min thread length
18"	4" Min thread length

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER STANDARD HARDWARE DETAILS

NO SCALE

RSP A78C1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78C1
DATED MAY 1, 2006 - PAGE 85 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A78C1

85

4-21-0

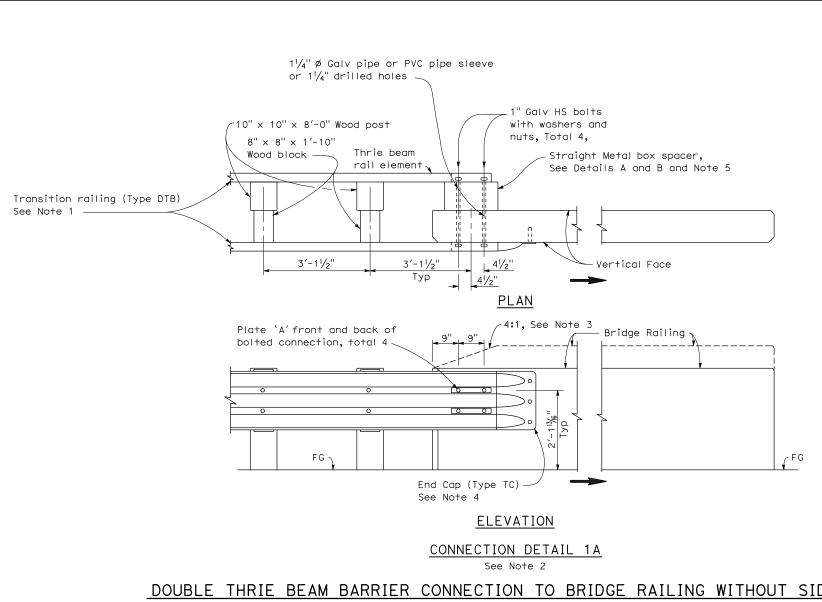
REVISED

STANDARD

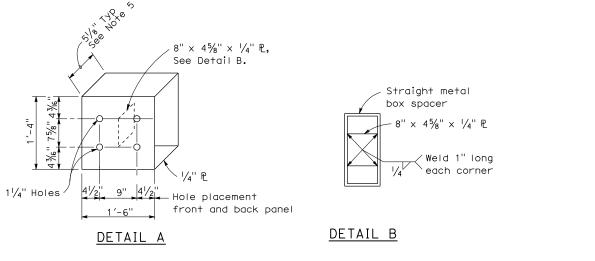
PLAN

RSP

A78C



DOUBLE THRIE BEAM BARRIER CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK



STRAIGHT METAL BOX SPACER

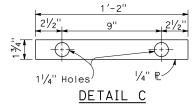


PLATE 'A'

IST COUNTY ROUTE Randell D. Hiatt Randell D. Hiat June 6, 2008 __C50200 PLANS APPROVAL DATE CIVIL The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this po

To accompany plans dated.

NOTES:

- For additional details of Transition Railing (Type DTB), see Standard Plans A78K.
 Transition Railing (Type DTB) transitions the standard 12 gage double thrie beam barrier to a heavier gage double thrie beam railing section then to a heavier gage nested double thrie beam barrier section which then is connected to the concrete bridge railing.
- 2. For typical use of Connection Detail 1A, see Type 25A Connection Layout on Revised Standard Plan RSP A78H.
- 3. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail 1A, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
- 4. For details of End Cap (Type TC), see Standard Plan A78C1.
- 5. See Standard Plan A78K for additional details regarding depth dimension for straight metal box spacer.
- 6. Direction of adjacent traffic indicated by ->.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DOUBLE THRIE BEAM BARRIER **CONNECTION TO BRIDGE RAILINGS** WITHOUT SIDEWALKS

NO SCALE

RSP A78F1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78F1 DATED MAY 1, 2006 - PAGE 92 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A78F1

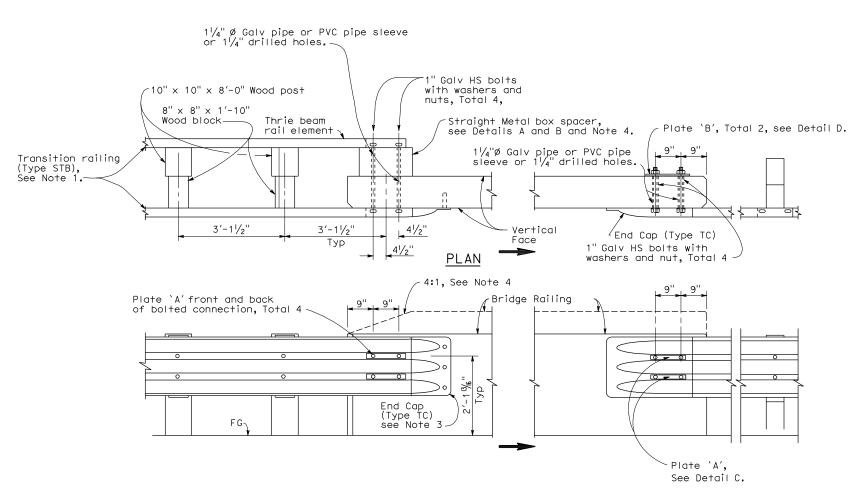


NOTES:

1. For additional details of Transition Railing (Type STB), see Standard Plans A78J. Transition Railing (Type STB) transitions the standard 12 gage single thrie beam barrier to a heavier gage single thrie beam railing section then to a heavier gage nested double thrie beam barrier section which then is connected to the concrete bridge railing.

2. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail 2A, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.

- 3. For details of End Cap (Type TC), see Standard Plan A78C1.
- See Standard Plan A78J for additional details regarding depth dimension for straight metal box spacer.
- 5. Direction of adjacent traffic indicated by ->.

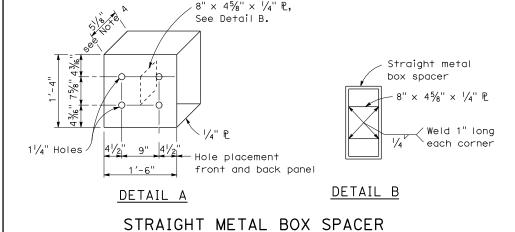


CONNECTION DETAIL 2A

CONNECTION DETAIL 3A

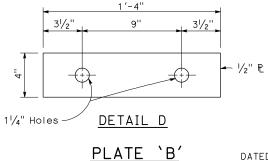
ELEVATION

SINGLE THRIE BEAM BARRIER CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK



1'-2"
9"
2'/2"
1'/4" Holes
DETAIL C

PLATE 'A'



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SINGLE THRIE BEAM BARRIER CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS

NO SCALE

RSP A78F2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78F2
DATED MAY 1, 2006 - PAGE 93 OF THE STANDARD PLANS BOOK DATED MAY 2006.

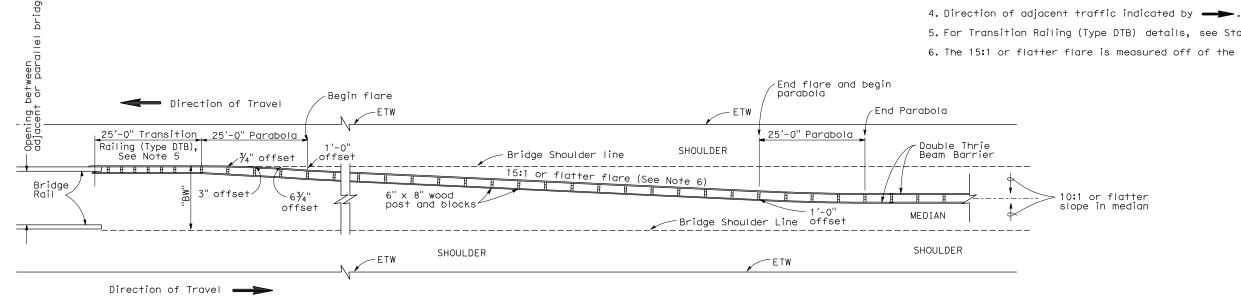
REVISED STANDARD PLAN RSP A78F2

DIST	COUNTY	ROUTE	POST MII	LES JECT	SHEET NO.	SHEE
ŘEG Jur	ISTERED O	NEEL REGISTER	Randel No. C5	I D. Hiat 50200 -30-09	CNG INEER	
agents	shall not be i	rnia or its offi responsible for electronic copie		` ` `	CIVIL CAL IFORM	/ 4//

To accompany plans dated.

NOTES:

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A78A, A78B, A78C1, and A78C2.
- 2. Post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" \times 8" \times 6'-0" wood with 6" \times 8" \times 1'-10" wood blocks. (W6 \times 9) steel posts, 6'-8" in length, with 6" \times 8" \times 1'-10" notched wood blocks or notched recycled plastic blocks may be used for 6" \times 8" \times 6'-0" wood posts with 6" \times 8" \times 1'-10" wood blocks where applicable and when specified.
- 5. For Transition Railing (Type DTB) details, see Standard Plan A78K.
- 6. The 15:1 or flatter flare is measured off of the edge of traveled way.



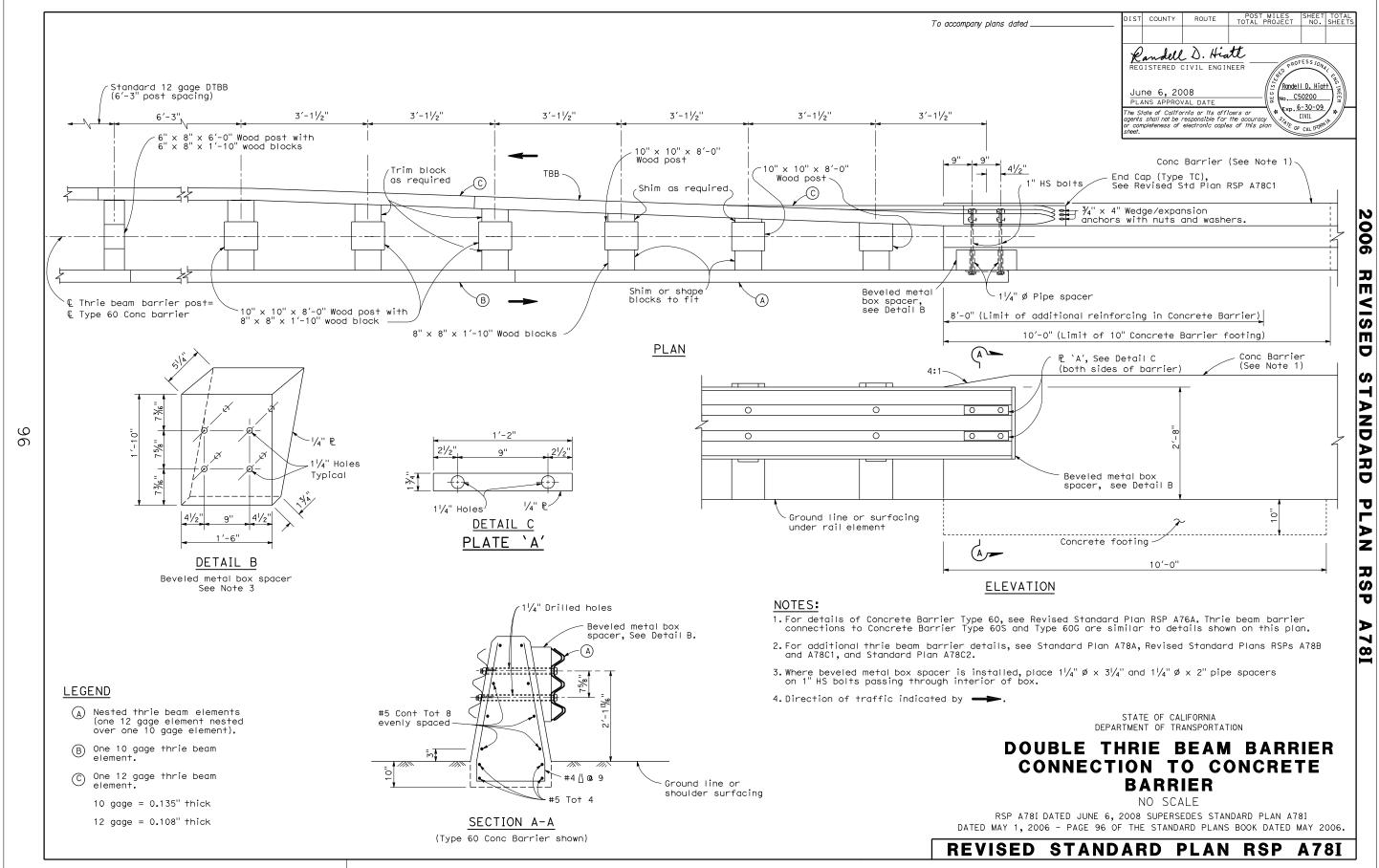
TYPE 25A CONNECTION LAYOUT

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

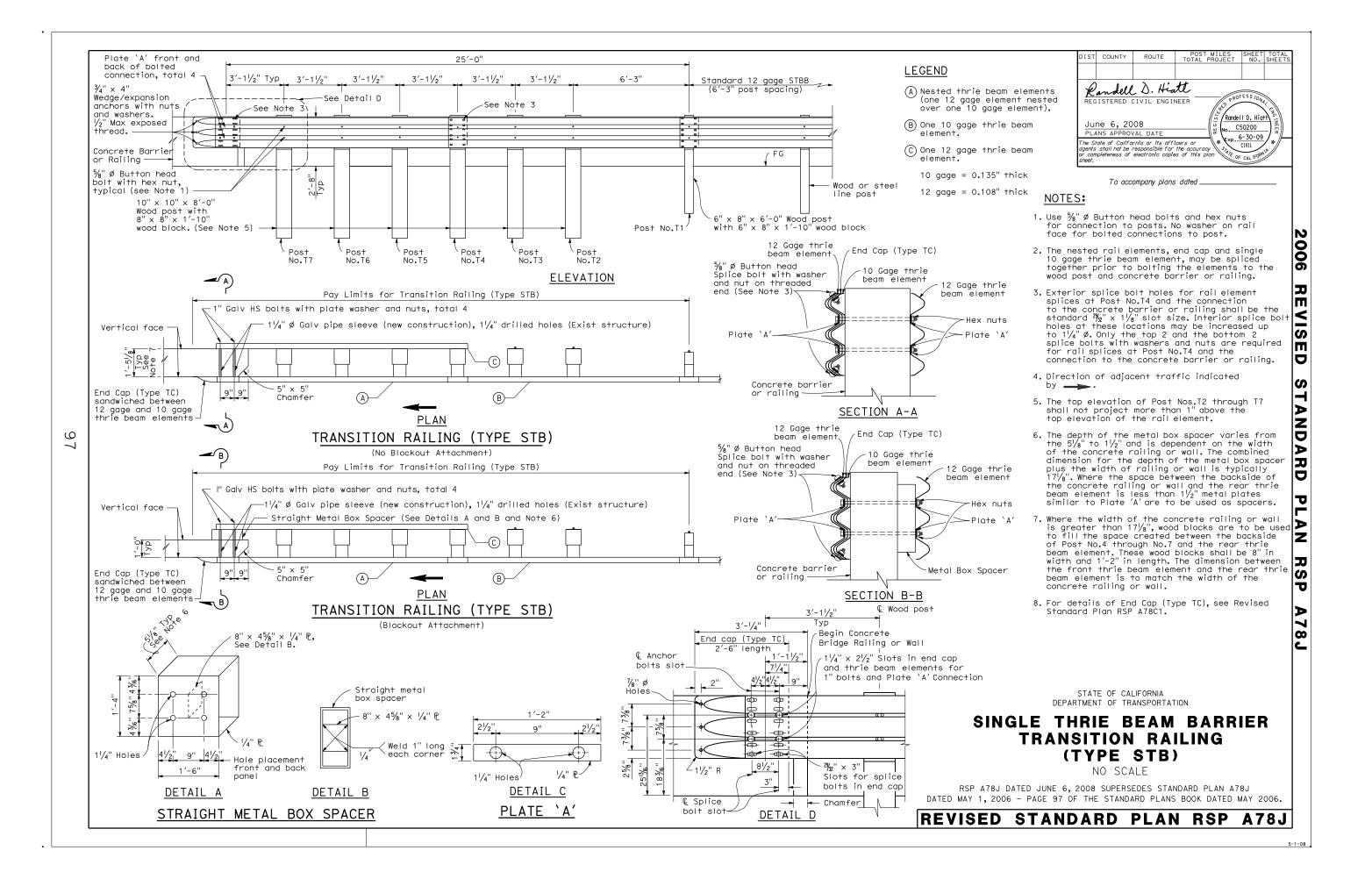
THRIE BEAM BARRIER TYPICAL LAYOUT FOR CONNECTION TO BRIDGE RAILING

RSP A78H DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78H DATED MAY 1, 2006 - PAGE 95 OF THE STANDARD PLANS BOOK DATED MAY 2006.

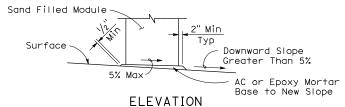
REVISED STANDARD PLAN RSP A78H



5-1-08

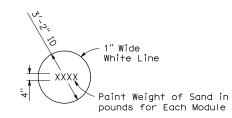






SLOPED SEAT DETAIL

(See Note 4)



PAINTING DETAIL

(See Note 5)

NOTES:

- 1. (xx) Indicates module location and mass of sand in pounds for each module. Module spacing is based on the greater diameter of the
- 2. All sand weights are nominal.
- 3. Each module is to contain amount of sand indicated, supported according to the manufacturer's instructions.
- 4. Modules shall be placed on asphalt concrete, epoxy mortar or concrete surface. Modules to be placed on surfacing with greater than 5% downward slope shall be seated as shown.
- 5. Mass of sand and outline of each module shall be painted on the surface at each module location.
- 6. Module blocking, epoxied to the deck surface, is required for all modules placed on bridge decks. Two acceptable alternatives are shown. Other alternatives recommended by the manufacturer and approved by the Engineer will be accepted.
- 7. Place the top of the Type R marker panel 1" below the module lid.
- 8. Approach speeds indicated conform to NCHRP Report criteria.

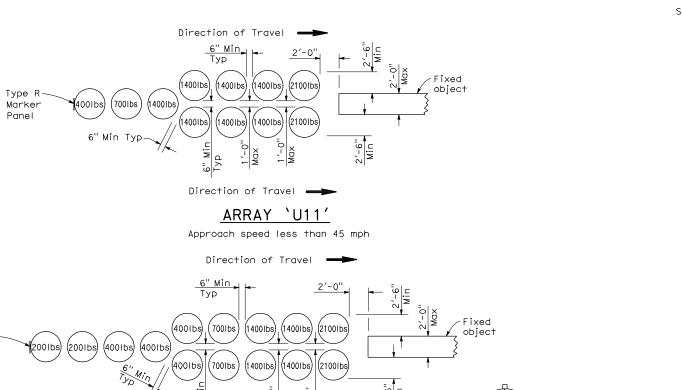
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CRASH CUSHION, SAND FILLED (UNIDIRECTIONAL)

NO SCALE

RSP A81A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A81A DATED MAY 1, 2006 - PAGE 99 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A81A



2′-6" Min Direction of Downward Slope Direction of Travel 1" x 1" x 1" ARRAY 'U14' ALTERNATIVE 1 Approach speed 45 mph or more **PLAN**

shown

Direction of Downward Slope 1" Thick Plywood Conc Blocks - Total 3 Half Circle ALTERNATIVE 2

Sand Filled Module Surface-Downward Slope 5% Max Plywood Blocking for Alternative 2

ELEVATION

BRIDGE DECK MODULE BLOCKING DETAILS

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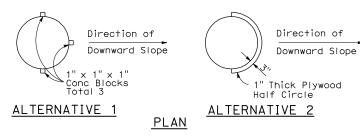
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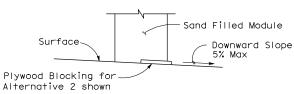
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NOTES:

- 1. (xx) Indicates module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the
- 2. All sand weights are nominal.
- 3. Each module is to contain amount of sand indicated, supported according to the manufacturer's instructions.
- 4. Modules shall be placed on asphalt concrete, epoxy mortar or concrete surface. Modules to be placed on surfacing with greater than 5% downward slope shall be seated as shown.
- 5. Mass of sand and outline of each module shall be painted on the surface at each module location.
- 6. Module blocking, epoxied to the deck surface, is required for all modules placed on bridge decks. Two acceptable alternatives are shown. Other alternatives recommended by the manufacturer and approved by the Engineer will be accepted.
- 7. Place the top of the Type R marker panel 1" below the module lid.
- 8. Approach speeds indicated conform to NCHRP Report criteria.





ELEVATION

BRIDGE DECK MODULE BLOCKING DETAILS

(See Note 6)

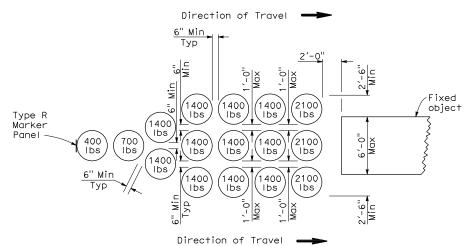
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CRASH CUSHION, SAND FILLED (UNIDIRECTIONAL)

NO SCALE

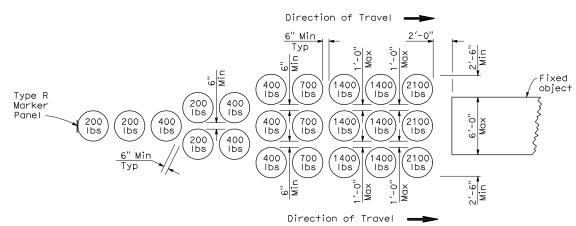
RSP A81B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A81B DATED MAY 1, 2006 - PAGE 100 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A81B



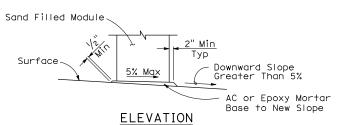
ARRAY 'U16

Approach speed less than 45 mph

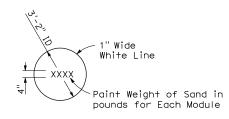


ARRAY 'U21

Approach speed 45 mph or more



SLOPED SEAT DETAIL (See Note 4)



PAINTING DETAIL

(See Note 5)

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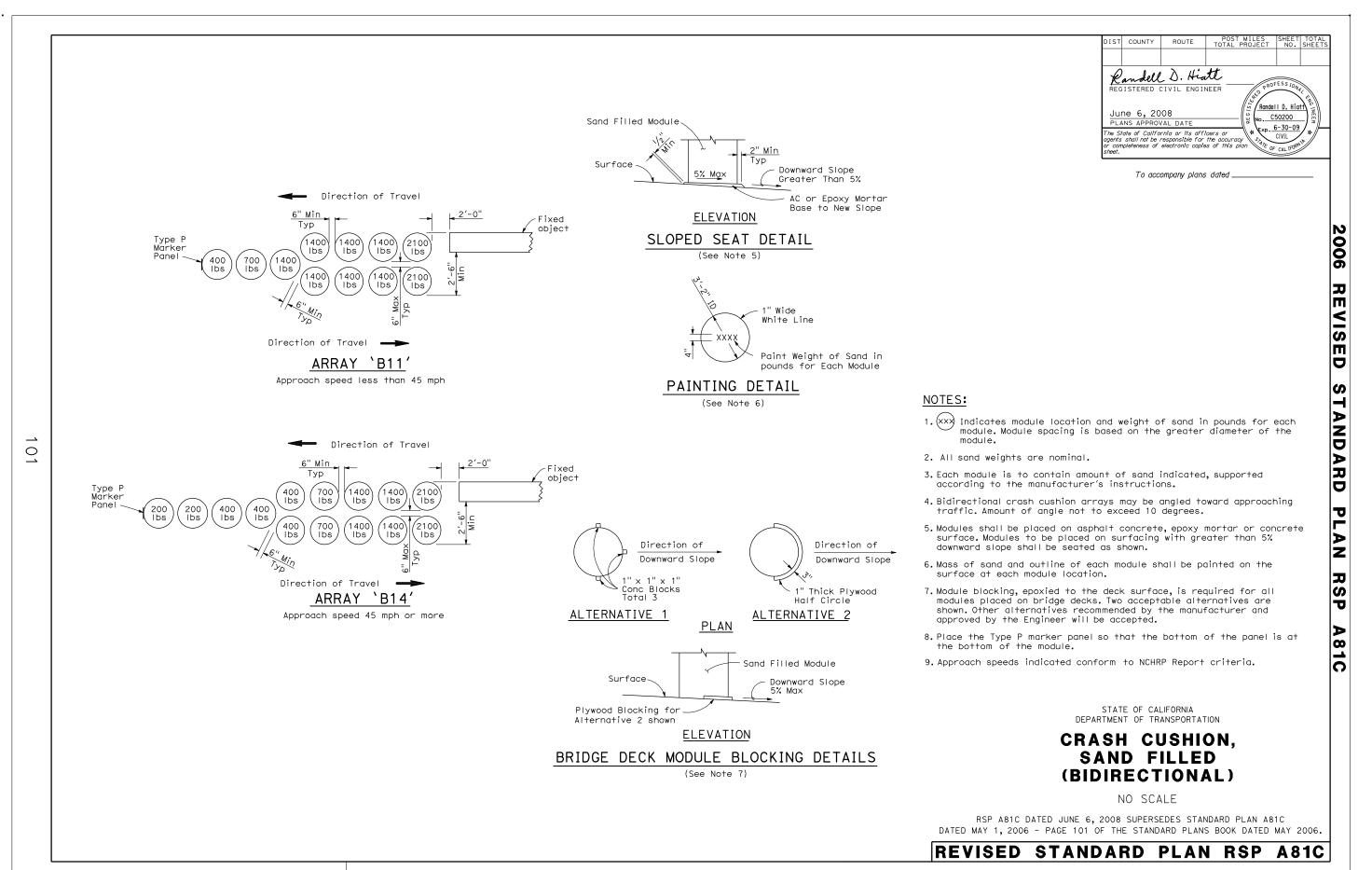
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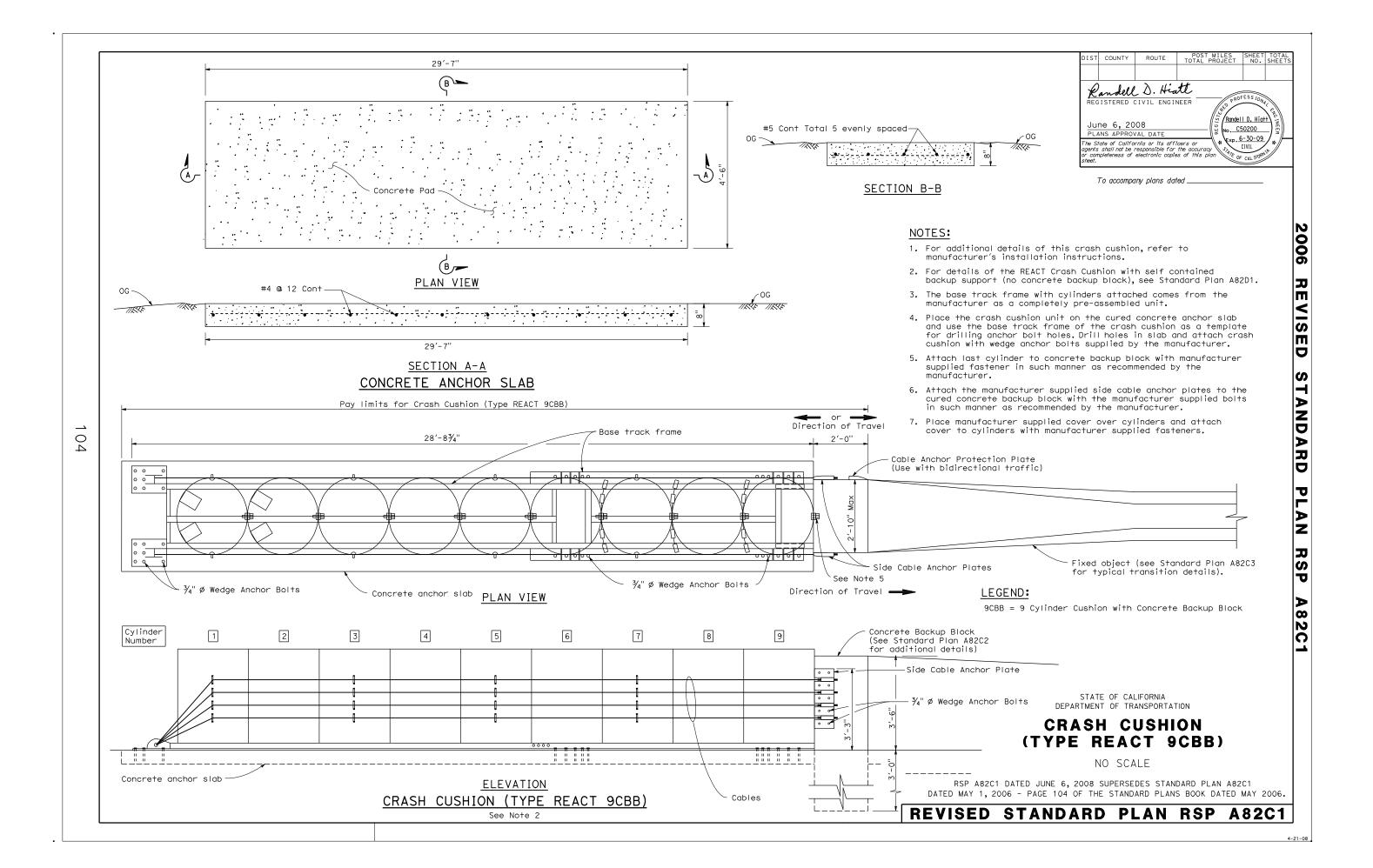
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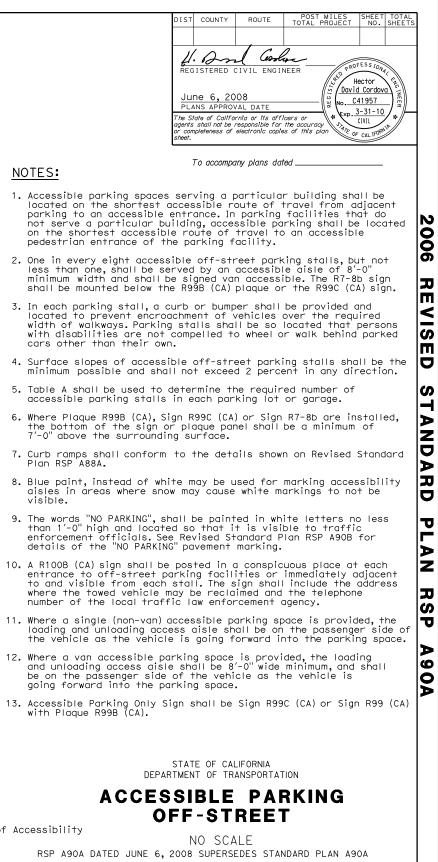
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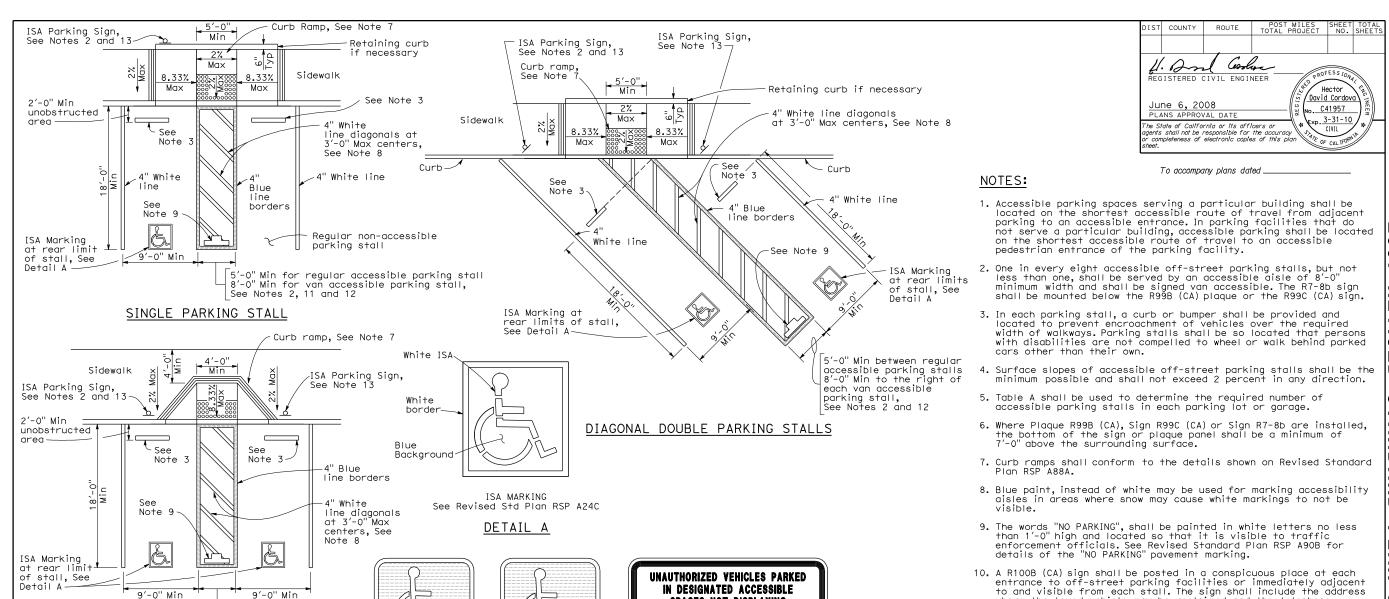
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DOUBLE PARKING STALL

See Notes 2 and 12

5'-0" Min between regular accessible parking stalls Is 8'-0" Min to the right of each

van accessible parking stall,

TABLE A

-		
Total Number of Parking Spaces or Stalls	Minimum Number of Disabled Accessible Parking Spaces or Stalls	SIGN R99 (CA)
1-25	1	
26-50	2	
51-75	3	I I I I I I I I I I I I I I I I I I I
76-100	4	1
101-150	5	
151-200	6	DI 101/5 DOOD (01)
201-300	7	PLAQUE R99B (CA)
301-400	8	SIGN R99 (CA) with PLAQUE R99B (CA) See Note 6
401-500	9	See Note 6
501-1000	2 percent of total	
Greater than 1001	20 plus 1 for each 100 or fraction thereof over 1001	

SIGN R99 (CA)

SIGN R99C (CA)

(Insert Address) OR BY TELEPHONING (Insert Telephone Number SIGN R100B (CA) See Note 10

SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR

SPECIAL LICENSE PLATES ISSUED

FOR PERSONS WITH DISABILITIES

WILL BE TOWED AWAY

AT THE OWNER'S EXPENSE

TOWED VEHICLES

MAY BE RECLAIMED AT

ACCESSIBLE

SIGN R7-8b See Notes 2 and 6

ACCESSIBLE PARKING

ISA = International Symbol of Accessibility

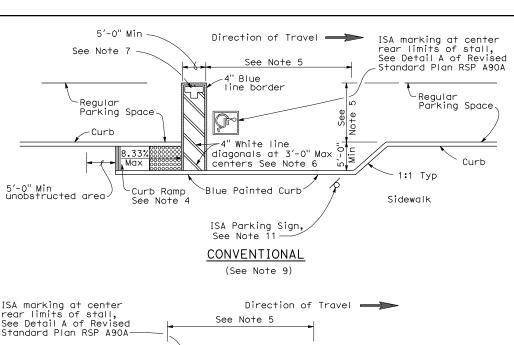
RSP A90A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A90A DATED MAY 1, 2006 - PAGE 117 OF THE STANDARD PLANS BOOK DATED MAY 2006

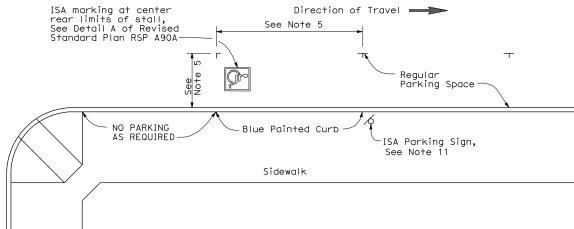
REVISED STANDARD PLAN RSP A90A

OFF-STREET PARKING SIGNS

(Parking lot or garage) See Note 6







ON-STREET PARKING

RESTRICTED RIGHT OF WAY WIDTH

(Parallel parking) (See Note 10)

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PAVEMENT MARKING See Note 7



SIGN R99 (CA)



PLAQUE R99B (CA) SIGN R99 (CA) with PLAQUE R99B (CA) See Note 3

ISA = International Symbol of Accessibility

SIGN R99C (CA)

See Note 3

POST MILES TOTAL PROJECT Cerolina Hector David Cordova C41957 Exp. 3-31-10 The State of California or its officers or agents shall not be responsible for the accu-or completeness of electronic copies of this

To accompany plans dated.

NOTES:

- Parking spaces shall be so located that persons with disabilities are not compelled to wheel or walk behind parked
- 2. Surface slopes of accessible on-street parking spaces shall
- 3. Where Plaque R99B (CA) or Sign R99C (CA) are installed, the bottom of the sign or plaque panel shall be a minimum of 7'-0" above the surrounding surface.
- 4. Curb ramps shall conform to the details shown on Revised Standard Plan RSP A88A.
- 5. Accessible on-street parking spaces shall not be smaller in length or width than that specified by the local jurisdiction for other parking spaces, but not less than 20'-0" in length and not less than 8'-0" in width.
- 6. Blue paint, instead of white may be used for marking accessibility aisles in areas where snow may cause white markings to not be visible.
- 7. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials. See Standard Plan A24E for square foot area for painting the words "NO PARKING".
- 8. There shall be no obstructions on the sidewalk adjacent to and for the full length of the parking space, except for the ISA
- 9. The Conventional detail should be the primary choice of accessible on-street parking. However, if the sidewalk lacks adequate space to construct a standard curb ramp, the Restricted Right of Way detail should be used.
- 10. If the Restricted Right of Way width detail is selected and it conflicts with a bus stop or other uses, this detail may apply to the other end of the block.
- 11. Accessible Parking Only Sign shall be Sign R99C (CA) or Sign R99 (CA) with Plaque R99B (CA).

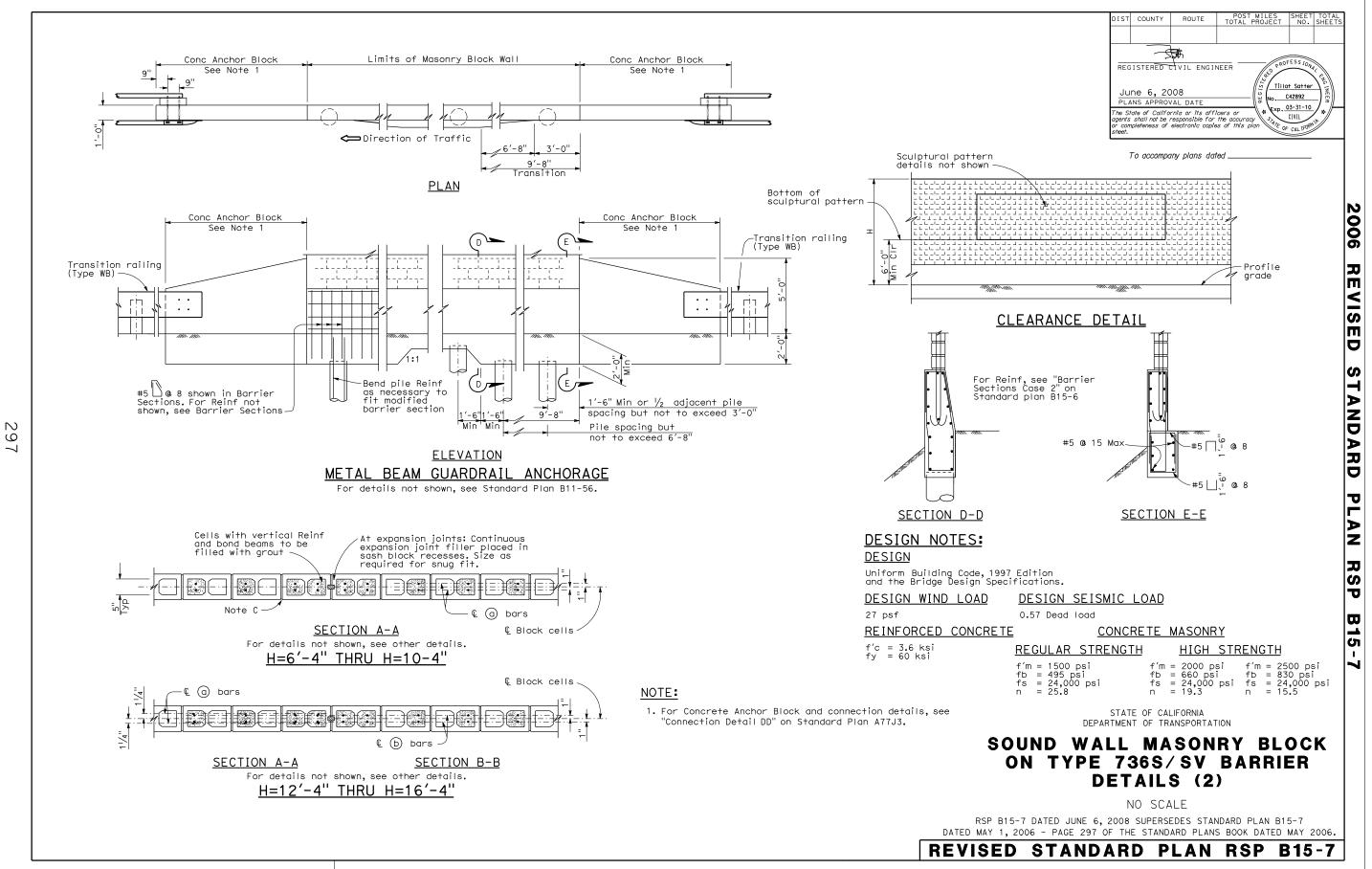
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ACCESSIBLE PARKING ON-STREET

NO SCALE

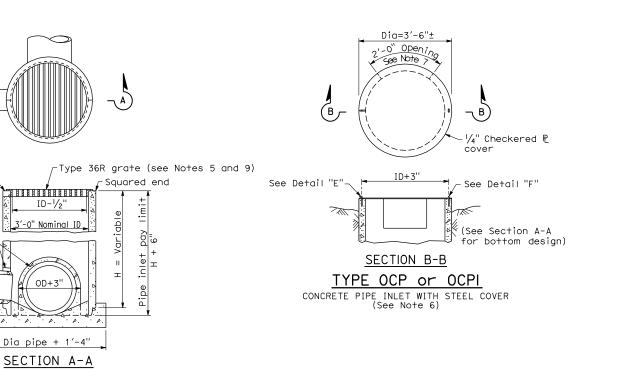
RSP A90B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A90B DATED MAY 1, 2006 - PAGE 118 OF THE STANDARD PLANS BOOK DATED MAY 2006.

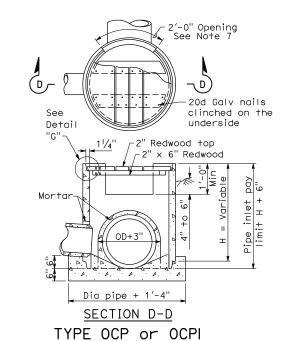
REVISED STANDARD PLAN RSP A90B



4-23-08



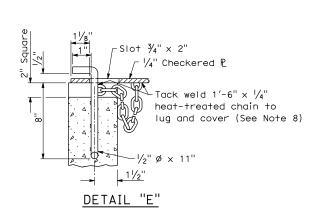




CONCRETE PIPE INLET WITH REDWOOD COVER (See Notes 6 and 10)



To accompany plans dated _



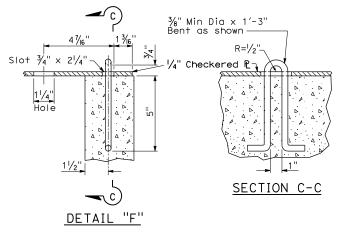
TYPE GCP
CONCRETE PIPE INLET WITH GRATE

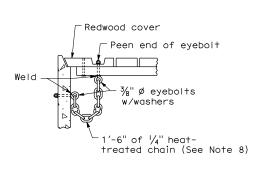
Cast 1" x $2\frac{1}{2}$ " slot

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in pipe to receive lug-





DETAIL "G"

NOTES:

- 1. For details of steel pipe inlets, see Standard Plan D75A.
- 2. For details of ladder and steps and when ladder or steps are required, see Standard Plan D75C.
- 3. Inlet pipes shall not protrude into basin.
- 4. Except for inlets used for junction boxes, basin floors shall have minimum slope of 4:1 from all directions toward outlet pipe, and a wood trowel finish.
- See Revised Standard Plan RSP D77A and Standard Plan D77B for Grate and Frame Details and Weights of Miscellaneous Iron and Steel.
- 6. Designation of Type OCPI pipe inlets on plans indicates trash racks are to be furnished and installed on all side openings. See Standard Plan D75C for Trash Rack details.
- More than one side opening may be required. Location and number as ordered by the Engineer. Opening may be cast in pipe.
- 8. Chain to be provided when specified.
- 9. Place pipe so bars of grate will be parallel with main surface flow.
- Redwood covers shall only be placed at locations designated on the plans.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CONCRETE PIPE INLETS

NO SCALE

RSP D75B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D75B DATED MAY 1, 2006 - PAGE 153 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D75B

8

<u>ANGLE</u>

DIST COUNTY ROUTE POST MILES SHEET TOTAL NO. SHEETS

REGISTERED CIVIL ENGINEER

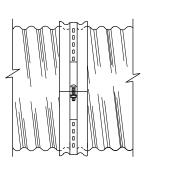
PLANS APPROVAL DATE

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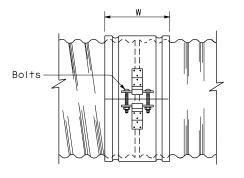
To accompany plans dated _

NOTES:

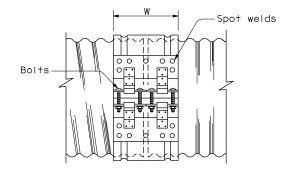
- All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
- 2. Dimensions and thicknesses shown are minimum.
- Spot welds shall develop minimum required strength of strap.
- Fillet welds of equivalent strength may be substituted for spot welds or rivets.
- 5. Dimension depends upon whether end condition is lips up or lips down.



SIDE VIEW ANGLE

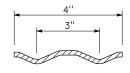


SINGLE BAR AND STRAP



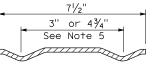
SIDE VIEW

DOUBLE BAR AND STRAP

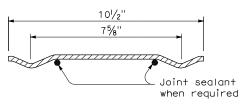


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SECTION
H-4 HUGGER BAND

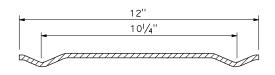


SECTION
H-7 HUGGER BAND



H-10 HUGGER BAND

SECTION



SECTION

H-12 HUGGER BAND

HUGGER COUPLING BANDS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 4 HUGGER COUPLING BANDS

NO SCALE

RSP D97D DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97D DATED MAY 1, 2006 - PAGE 186 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97D

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ANNULAR AND HELICAL PROFILE

							BAR AND STRAP			4P	ANGLE							
	Γ		_			T			(CSP	ONLY)		DIMEN	CTONC		_TS · Dia)		ETS	SPOT WELDS
COUPLING	PIPE	PIPE			THICKNESS	BAND TH	IICKNESS T	STRAP	BOLTS	BAR	BAR YIELD		210N2	(NO	· Dia)	ANGLE	T BAND	ANGLE TO BAND
TYPE	CORRUGATION	SIZE	W OR A	CSP	CAP	CSP	CAP	THICKNESS	Dia	Dia	STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE	11/2' × 1/4"	6"-10"	7''	0.052"-0.079"	0.048"-0.060"	0.052"	0.060"							2-3/8"	2-3/8"			
INTEGRAL		12"-18"	7"	0.052"-0.079"		0.064"								2-1/2"				
FLANGE	$2^2/_3'' \times 1/_2''$	12"-24"	7''	0.052"-0.079"	0.060"-0.105"	0.064"								2-1/2"	2-1/2"			
		THROUGH 36"	12"	0.052"-0.138"	0.060"-0.135"							2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
UNIVERSAL	2 ² / ₃ " × 1/ ₂ "	42"-60"	12"	0.052"-0.168"	0.075"-0.164"	0.052"	0.060"					2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
TENGAL	2 -/3 × /2	THROUGH 72"	12"	0.052"-0.168"	0.164"	0.052"	0.105"	0.079"	1/2"	7∕8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		78"-84"	161/4"	0.168"		0.079"		DOUBLE 0.079"	1/2"	7/8''	32 ksi							
		THROUGH 36"	7''		0.060"-0.135"			0.079"	1/2"	7∕8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	2-1/2"	2-1/2"	3-3/8"	3-3/8"	3-1/2"
	$2^{2}/_{3}$ " × $1/_{2}$ "	42"-72"	12"		0.075"-0.164"		0.105"	0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNULAR		78''-84''	12"	0.168"		0.079"		0.109"	1/2"	⅓"	45 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
		48"-90"	14"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"	_	3-1/2"		3-3/8"		5-1/2"
	3" × 1"	96"-120"	14"	0.079"-0.109"		0.052"		0.109"	1/2"	7∕8''	45 ksi	2" × 2" × 3/6"	_	3-1/2"		4-3%"		
		42"-108"	14"		0.060"-0.135"		0.060"						2" × 2" × 3/16"		3-1/2"		3-3/8"	
	-	THROUGH 36"	12"	0.052"-0.138"	0.060"-0.135"			0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
	$2^{2}/_{3}$ " × $1/_{2}$ "	42"-72"	12"		0.075"-0.164"		0.060"	0.079"	1/2"	7∕ ₈ ''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
HELICAL		78"-84"	12"	0.168"		0.079"		0.109"	1/2"	7/8"	45 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
	- " 4"	48''-90''	14"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
	3" × 1"	96''-120''	14"	0.079"-0.109"		0.052"		0.109"	1/2"	7/8"	45 ksi	2" × 2" × 3/6"		3-1/2"	1.6.	4-3/8"		
		42"-108"	14"		0.060"-0.135"		0.060"						2" × 2" × 3/6"		3-1/2"		3-3/8"	
		12"-54"	4"	0.052"-0.109"		0.052"							$2\frac{1}{2}$ " × $1\frac{1}{2}$ " × $\frac{3}{6}$ "					3-1/2"
		60"-66"	4''	0.109"		0.064"							$2\frac{1}{2}$ " × $1\frac{1}{2}$ " × $\frac{3}{6}$ "					3-1/2"
	$2^{2}/_{3}$ " × $1/_{2}$ "	36"-48"	4''	0.138"		0.064"						$2\frac{1}{2}$ × $1\frac{1}{2}$ × $\frac{3}{6}$	$2\frac{1}{2}$ " × $1\frac{1}{2}$ " × $\frac{3}{6}$ "	1-1/2"				3-1/2"
	REROLLED END		101/2"	0.052"-0.168"		0.052"		0.079"	1/2"	7/8"	32 ksi							
		78"-84"	101/2"	0.168"		0.079"		0.109"	1/2"	7/8"	45 ksi							
	3" × 1"	48''-90''	101/2"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi							
HUGGER	REROLLED END		101/2"	0.079"-0.109"		0.052"		0.109"	1/2"	7/8''	45 ksi			1.7.1				1.6.11
		48"-66"	71/2"	0.064"-0.109"		0.064"		0.079"	1/2"	7/8"	32 ksi		$2\frac{1}{2}$ " × $1\frac{1}{2}$ " × $\frac{3}{6}$ "					3-1/2"
	EII 4II	72"-90"	71/2"	0.064"-0.079"		0.064"		0.079"	1/2"	7/8"	32 ksi	$2\frac{1}{2}$ × $1\frac{1}{2}$ × $\frac{3}{6}$	$2\frac{1}{2}$ " × $1\frac{1}{2}$ " × $\frac{3}{6}$ "	1-1/2"				3-1/2"
	5" × 1"	48"-90"	71/2"	0.064"-0.138"		0.064"		0.079"	1/2"	7/8"	32 ksi							
	REROLLED END			0.064"-0.109"		0.064"		0.079"	1/2"	7/8"	32 ksi							
		48"-84"	12" NOTE			0.064"		0.079"	1/2"	7/8"	32 ksi							
		90"-120"	12") 11	0.138"		0.064"		DOUBLE 0.079"	1/2"	7/8"	32 ksi					1		

								SPIRAL	RIB	PRO	FTIF ,							
														ANGLE				
				PIPE WALL	THICKNESS	BAND TH	IICKNESS		AR AND (SSRP O			DIMEN	SIONS		LTS – Dia)	RIV ANGLE		SPOT WELDS ANGLE TO BAND
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
		24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.052"	0.060"	0.079"	1/2"	7∕8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNULAR	$2^{2}/_{3}$ " × $1/_{2}$ " *	42"-60"	12"	0.064"-0.109"	0.075"-0.105"	0.052"	0.105"	0.079"	1/2"	7∕8''	32 ksi	$2'' \times 2'' \times \frac{3}{6}''$	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3%"	5-1/2"
ANNOLAN	REROLLED END	66"-72"	12"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		78"-114"	12"	0.079"-0.109"		0.079"		0.109"	1/2"	7/8''	45 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
HUGGER	2 ² / ₃ " × 1/ ₂ " *	24"-72"	101/2"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8''	32 ksi							
I HUGGER	REROLLED END	78''-84''	101/2"	0.109"		0.079"		0.109"	1/2"	7∕8''	45 ksi							

* See Note 14.

14. All profiles of Spiral Rib Pipe ($\frac{3}{4}$ " x $\frac{3}{4}$ " ribs at $7\frac{1}{2}$ " pitch and $\frac{3}{4}$ " x 1" ribs at $11\frac{1}{2}$ " pitch in both steel and aluminum and $\frac{3}{4}$ " x 1" ribs at $8\frac{1}{2}$ " pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be $2\frac{9}{3}$ " x $\frac{1}{2}$ " annual corrugations with a minimum of two full corrugations at each end.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL
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PLA	NS APPRO	AL DATE		-30-08	/ ~/ <u> </u>
agents	shall not be i	rnia or its offi responsible for electronic copie	cers or \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	CIVIL CAL IFORM	/ ~//

NOTES:

To accompany plans dated _

- All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
- For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
- Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
- 4. Use $1^{1}/_{4}^{\circ}$ gage line dimension on attached angle leg for rivets and spot welds.
- 5. Band thickness shall not be less than:
 - a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
 - b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
- 6. Dimensions, thicknesses and strengths shown are minimum.
- 7. For pipe arches use same width band as for round pipe of equal periphery.
- 8. Fillet welds of equivalent strenght may be substituted for spot welds or rivets.
- Spot welds shall develop minimum required strength of strap.
- 10. Pipe with rerolled ends having at least two $2^2/_3$ " x $1/_2$ " annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having $2^2/_3$ " x $1/_2$ " corrugations.
- 11. In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".
- 12. Two piece bands are required for pipes greater than 42" diameter.
- 13. The $2\frac{1}{4}$ " x 2" x 0.109" thick galvanized die-formed angle connector may be used in lieu of the 2" x 2" x $\frac{3}{6}$ " angle connector for standard joints only on pipes through 72" diameter.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 5 STANDARD JOINT

NO SCALE

RSP D97E DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97E DATED MAY 1, 2006 - PAGE 187 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97E

									R AND S					А	NGLE			
								(C	SP ONL	_Y)		DIVE	NSIONS		LTS	RI'	VETS	SPOT WELDS
COUPLING	PIPE	PIPE		PIPE WAL	L THICKNESS	BAND TI	HICKNESS	STRAP	DOL TO	BVD	BAR YIELD		4210N2	(No	Dia)	ANGLE 7	TO BAND	ANGLE TO BAND
TYPE	CORRUGATION	SIZE	W OR A	CSP	CAP	CSP	CAP	THICKNESS	Dia	Dia	STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
–	1½" x ¼"	6"-10"	7''	0.064"-0.079"	0.060"	0.064"	0.060"					33.	041	2-3/8"	2-3/8"	001	07	
INTEGRAL			12"	0.004 0.013	0.060"-0.105"									- 78	3-1/2"			
FLANGE		12"-24"	12"	0.064"-0.138"		0.064"	0.060"	0.079"	17 "	7/ !!	70 1.5	011 011 3/11	OII OII 3/ II	7 1/11		7 3/11	7 3/11	F 1/ "
UNIVERSAL	$2^{2}/_{3}$ " × $1/_{2}$ "	THROUGH 36" 42"-60"		0.064"-0.168"			0.060"		1/2"	7/8"	32 ksi 32 ksi	2" × 2" × 3/6"		3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
			161/4"		0.060"-0.184	0.064"		DOUBLE 0.079"	1/2"	7/8"	J2 K51	2" × 2" × 1/4"		4-1/2"	4-1/2" 3-1/2"	5-3/8"	5-3/8"	5-1/2"
		THROUGH 36"	12"		0.060 -0.133	0.064"	0.060"						2" × 2" × 3/6"	3-1/2"	3-72	3-3/8"	3-3/8"	
		42"-60"	12"	0.064"-0.079"	0 47511 0 4641	0.064"	0.075"					2" × 2" × 3/6"		3-1/2"	7 1/ !!	3-3/8"	F 3/II	5-1/2"
	$2^{2}/_{3}$ " × $1/_{2}$ "	42"-60"	12" 24"	0.109"-0.168"	0.135"-0.164"	0.064	0.075					2 × 2 × 1/4	2" × 2" × 1/4"	3-1/2"	3-1/2"	5-3/8"	5-3/8"	
	'3 '-	66"-72"			0.164	0.004	0.105						2" × 2" × 1/4"	- 1/II	5-1/2"	- 7/11	5-1/2"	
		66"-84"	24"	0.109"-0.168"	0 00011 0 4051	0.064"						2" × 2" × 1/4"	011 011 3/ 11	5-1/2"	¬ 1/ II	7-3/8"	- 7/11	
ANNULAR		42"-54"	12"		0.060"-0.105	1	0.060"						2" × 2" × 3/6"	- 17 11	3-1/2"	- 7/11	3-3/8"	- 17.0
		48"-60"	14"	0.064"-0.079"		0.064"						2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
		48''-60''	14"	0.109"		0.064"						2" × 2" × 3/6"		3-1/2"		5-3/8"		
		66"-120"	25"	0.064"-0.109"		0.064"						$2'' \times 2'' \times \frac{3}{6}''$		5-1/2"	- 170	9-3/8"		
	3" × 1"	42"-60"	14"		0.060"-0.105"		0.060"						2" × 2" × 3/6"		3-1/2"		5-3/8"	
		42"-60"	14"		0.135"		0.075"						2" × 2" × 1/4"		3-1/2"		5-3/8"	
		66"-96"	25"		0.060"-0.135"	1	0.060"						2" × 2" × 1/4"		5-1/2"		7-3/8"	
		96"-108"	25''		0.135"		0.075"						2" × 2" × 1/4"		5-1/2"		7-3/8"	
		THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"					2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		42"-54"	12"		0.060"-0.105"	1	0.060"						2" × 2" × 3/6"		3-1/2"		3-3/8"	
	02/11 1/11	42"-60"	12"	0.064"-0.079"		0.064"						2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
	2 ² / ₃ " × ¹ / ₂ "	42"-60"	12"	0.109"-0.168"	0.135"-0.164"	0.064"	0.075"					2" × 2" × 1/4"	2" × 2" × 1/4"	3-1/2"	3-1/2"	5-3/8"	5-3/8"	
		66'-84"	24"	0.109"-0.168"		0.064"						2" × 2" × 1/4"		5-1/2"		7-3/8"		
		66"-72"	24"		0.164"		0.105"						2" × 2" × 1/4"		5-1/2"		5-3/8"	
HELICAL		48''-60''	14"	0.064"-0.079"		0.064"						2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
		48"-60"	14"	0.109"		0.064"						2" × 2" × 3/6"		3-1/2"		5-3/8"		
		66"-120"	25"	0.064"-0.109"		0.064"						2" × 2" × 3/6"		5-1/2"		9-3/8"		
	3" × 1"	42"-60"	14"		0.060"-0.105"	11111	0.060"					7.0	2" × 2" × 3/6"	- / 2	3-1/2"	,,,	5-3/8"	
		42"-60"	14"		0.135"		0.075"						2" × 2" × 1/4"		3-1/2"		5-3/8"	
		66"-96"	25"		0.060"-0.135"		0.060"						2" × 2" × 1/4"		5-1/2"		7-3/8"	
		96"-108"	25"		0.135"		0.075"						2" × 2" × 1/4"		5-1/2"		7-3/8"	
		THROUGH 48"	101/2"	0.109"		0.064"		0.079"	1/2"	7/8''	32 ksi		, 4				. 70	
		54"- 66"	101/2"	0.109"		0.064"		DOUBLE 0.079"	1/2"	7/8"	32 ksi							
HUGGER	$2^{2}/_{3}$ " × $1/_{2}$ "	THROUGH 54"		0.064"-0.079"		0.064"		0.079"	1/2"	7/8"	32 ksi							
	REROLLED	THROUGH 60"	101/2"	0.138"		0.079"		DOUBLE 0.079"	1/2"	7/3''	32 ksi							
	END	66"-72"	101/2"	0.138"		0.109"		DOUBLE 0.079"	1/2"	7/8''	32 ksi							
		THROUGH 72"	101/2"	0.168"		0.109"		DOUBLE 0.109"	1/2"	7%"	45 ksi							
		48"-84"	101/2"	0.109"		0.079"		DOUBLE 0.079"	1/2"	7/8"	32 ksi							
	3" × 1"	48"-90"		0.064"-0.079"		0.064"		DOUBLE 0.079"	1/2"	7/8 1/8"	32 ksi							
	REROLLED	96"-102"	101/2"	0.079"	 	0.079"		DOUBLE 0.079"	1/2"	7/8	32 ksi							
	END	90"-120"	101/2"	0.109"	+	0.109"	 	DOUBLE 0.109"	1/2"	7/8''	45 ksi	1						
		30 120	10/2	0.103		10.103		DOODLL 0.109	/2	/8	100 64	l .					l	

								SPIRAL	RIB	PRO	FILE			ANGLE				
				PIPE WALL	THICKNESS	BAND TH	ICKNESS	E	BAR AND (SSRP			DIMEN	SIONS		LTS - Dia)		/ETS TO BAND	SPOT WELDS ANGLE TO BAND
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	w	SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
		24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.064"	0.060"	0.079"	1/2"	7/8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNULAR	$2^{2}/_{3}$ " × $1/_{2}$ " ×	42"-60"	12"	0.064"-0.079"	0.075"-0.105"	0.064"	0.075"	0.079"	1/2"	7/8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNOLAN	REROLLED END	42"-60"	12"	0.109"		0.064"		0.079"	1/2"	7/8''	32 ksi	2" × 2" × 1/4"		3-1/2"		5-3/8"		
		66"-84"	24"	0.109"		0.064"		0.079"	1/2"	7/8''	32 ksi	2" × 2" × 1/4"		5-1/2"		7-3%"		
	2 ² / ₃ " × 1/ ₂ " *	24"-54"	101/2"	0.064"-0.079"		0.064"		0.079"	1/2"	7/8''	32 ksi							
	REROLLED END	24"-48"	101/2"	0.109"		0.064"		0.079"	1/2"	7/8''	32 ksi							
	INCHOLLED LIND	54"-66"	101/2"	0.109"		0.064"		Double 0.079"	1/2"	7/2"	32 ksi	-						

* See Note 13.

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13. All profiles of Spiral Rib Pipe ($\frac{7}{4}$ " x $\frac{3}{4}$ " ribs at $7\frac{1}{2}$ " pitch and $\frac{7}{4}$ " x 1" ribs at $11\frac{1}{2}$ " pitch in both steel and aluminum and $\frac{7}{4}$ " x 1" ribs at $8\frac{1}{2}$ " pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be $2\frac{2}{3}$ " x $\frac{1}{2}$ " annual corrugations with a minimum of two full corrugations at each end.

DIST	COUNTY	ROUTE	POST MILES SHE TOTAL PROJECT N	ET TOTAL O. SHEET
REG JL				100 EX 1
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To accompany plans dated

<u>NOTES:</u>

- All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
- For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
- Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
- 4. Use $1\frac{1}{4}$ gage line dimension on attached angle leg for rivets and spot welds.
- 5. Band thickness shall not be less than:
 - a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
 - b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
- Dimensions, thicknesses and strengths shown are minimum.
- For pipe arches use same width band as for round pipe of equal periphery.
- 8. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
- 9. Spot welds shall develop minimum required strength of strap.
- 10. Pipe with rerolled ends having at least two $2^2/_3$ " \times $1/_2$ " annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having $2^2/_3$ " \times $1/_2$ " corrugations.
- 11. In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".
- 12. Two piece bands are required for pipes greater than 42" diameter.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 6 POSITIVE JOINT

NO SCALE

RSP D97F DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97F DATED MAY 1, 2006 - PAGE 188 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97F

4-2-08

Raymond On Josto REGISTERED CIVIL ENGINEER

June 6, 2008 PLANS APPROVAL DATE

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ROUTE

To accompany plans dated _ NOTES:

IST COUNTY

- 1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
- 2. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the
- 3. Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
- 4. Use $1\frac{1}{4}$ gage line dimension on attached angle leg for rivets and spot welds.
- 5. Band thickness shall not be less than:
 - a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
 - b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
- 6. Dimensions, thicknesses and strengths shown are minimum.
- 7. For pipe arches use same width band as for round pipe of equal periphery.
- 8. Fillet welds of equivalent strenght may be substituted for spot welds or rivets.
- 9. Spot welds shall develop minimum required strength of strap.
- 10. Pipe with rerolled ends having at least two $2^2/_3$ " x $1/_2$ " annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having $2^2/_3$ " x $1/_2$ " corrugations.
- 11. For downdrain applications, two piece integral flange couplers shall have factory applied sleeve type rubber gaskets with a minimum length of 7" measured along the length of the pipe.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 7 DOWNDRAIN

NO SCALE

RSP D97G DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97G DATED MAY 1, 2006 - PAGE 189 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97G

ANNULAR AND HELICAL PROFILE

							1	BAF	R AND STRAF)			ANGLE				
	1			1		1		· ·	CSP ONLY)		DIMEN	SIONS		LTS	RIV		SPOT WELDS
	DIDE	DIDE		PIPE WALL	THICKNESS	BAND TH	ICKNESS		DOL TO	DAD			(NO	- Dia)	ANGLE I	O BAND	ANGLE TO BAND
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	CSP	CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	BAR Dia	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE INTEGRAL	1½' × ¼"	6''	7"	0.064"-0.168"		0.052"							3-3/8"				
FLANGE	1½' × ¼"	8''-10''	7''	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"						3-3/8"	3-3/8"			
ANNULAR		THROUGH 24"		0.064"-0.168"	0.060"-0.164"	0.064"	0.060"				2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8''	3-1/2"
HUGGER	$2^2/_3$ " × $1/_2$ " REROLLED END	THROUGH 24"	101/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7⁄8''							

								CDIDAL	RIB PRO	EILE							
								31 INAL	IVID I IVO	1 1			ANGLE				
PIPE WALL THICKNESS BAND THICKNESS								BAR AND STRAP (SSRP ONLY)			DIMEN	BOLTS (No Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND	
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	w	SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
	$2^2/_3$ " × $1/_2$ " * REROLLED END		12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"				2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3%"	3-1/2"
HUGGER	2 ² / ₃ " × 1/ ₂ " *	24"	101/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7⁄8''							

^{*} See Note 12.

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12. All profiles of Spiral Rib Pipe ($\frac{3}{4}$ " x $\frac{3}{4}$ " ribs at $7\frac{1}{2}$ " pitch and $\frac{3}{4}$ " x 1" ribs at $11\frac{1}{2}$ " pitch in both steel and aluminum and $\frac{3}{4}$ " x 1" ribs at $8\frac{1}{2}$ " pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be $2\frac{1}{3}$ " x $\frac{1}{2}$ " annual corrugations with a minimum of two full corrugations at each end.

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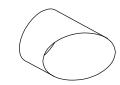


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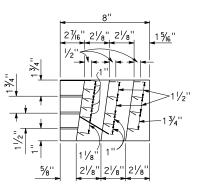


TUNNEL FULL CIRCLE

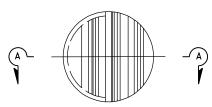
CAP OR CUT AWAY LEFT ANGLE

VISORS

(Right angle is reversed of figure)



SECTION A-A



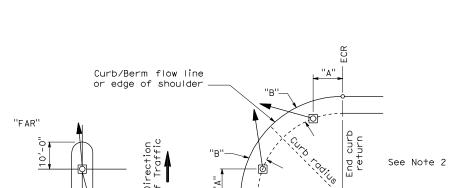
FRONT VIEW

DIRECTIONAL LOUVER

Directional louvers shall be oriented as directed by the Engineer and secured in place with one plated brass machine screw and nut.

U-TURN SIGNAL

FACE



NOTES:

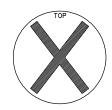
"NEAR"

- Typical signal pole placement unless dimensioned on plans.
- 2. For "A" and "B" dimensions, see Pole Schedule, or as directed by the Engineer.

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS







LANE CONTROL SIGNAL FACE



POST MILES TOTAL PROJECT

> Jeffery G. McRae No. E14512 Exp. 6-30-10

Lylley D. M. Pal Egistered electrical end

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To accompany plans dated _

Begin curb

řeturn

LANE CONTROL SIGNAL FACE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN ES-4C DATED MAY 1, 2006 - PAGE 420 OF THE STANDARD PLANS BOOK DATED MAY 2006.

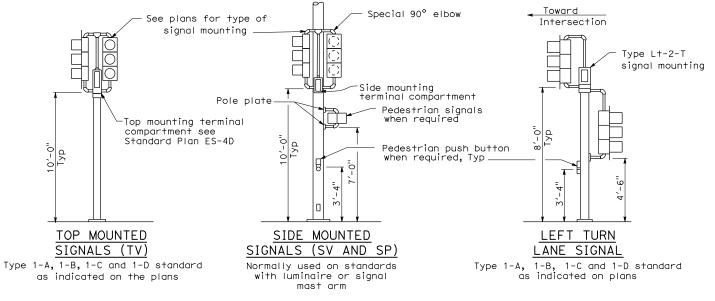
REVISED STANDARD PLAN RSP ES-4C

B" ±1/2" for 8" sections 51/2" ±1/2" for 12" sections Drill signal face and attach backplate with six 10-24 or 10-32 self-tapping and locking stainless steel machine screws and flat washers

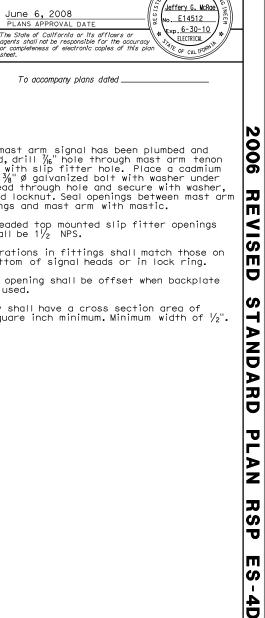
8" AND 12" SECTIONS

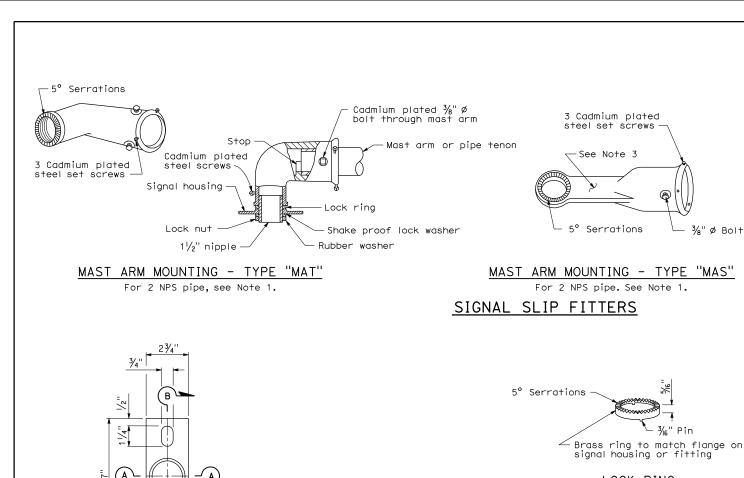
BACKPLATE

⅓6" minimum thickness 3001-14 aluminum, or plastic when specified



TYPICAL SIGNAL INSTALLATIONS





Bronze washer curved to fit standard

1/2" Ø Standard bolt galvanized

1/2" Ø Lock washer

Washers, see Detail "C" Detail

Cable guide. Omit on upper plate —

DETAIL "C"

SECTION B-B

-Flat washer

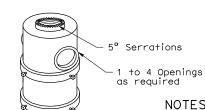
Signal standard

 $1\frac{1}{2}$ NPS Pipe thread

 $\it \subset 5^{\circ}$ Serrations

For one mounting

3/4" Ø Bolt



5° Serrations

For bolts, see "Pole Plate" detail

For mulitiple mountings

TOP MOUNTINGS

For 4 NPS pipe, see Note 2.

SIDE MOUNTING

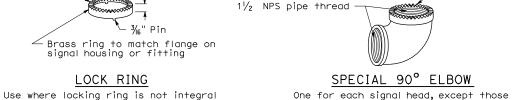
To accompany plans dated

Lyfuy D. M. Pal REGISTERED ELECTRICAL EN

POST MILES TOTAL PROJECT

NOTES:

- 1. After mast arm signal has been plumbed and secured, drill γ_6 " hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated 3%" ø galvanized bolt with washer under bolt head through hole and secure with washer. nut, and locknut. Seal openings between mast arm mountings and mast arm with mastic.
- 2. (a) Threaded top mounted slip fitter openings shall be $1/\!\!/_2$ NPS.
- (b) Serrations in fittings shall match those on bottom of signal heads or in lock ring.
- (c) Top opening shall be offset when backplate is used.
- 3. Wireway shall have a cross section area of 0.95 square inch minimum. Minimum width of $\frac{1}{2}$.



with signal housing or fitting. with special slip fitter mounting

MISCELLANEOUS MOUNTING HARDWARE

Two rows of 3 set screws

TERMINAL COMPARTMENTS

Drill and tap for $1\frac{1}{2}$ NPS

standard pipe thread

TOP MOUNTING

-Curved washer, lock washer and nut, see Section B-B Cable guide

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND **MOUNTINGS**)

NO SCALE

RSP ES-4D DATED June 6, 2008 SUPERSEDES STANDARD PLAN ES-4D DATED MAY 1, 2006 - PAGE 421 OF THE STANDARD PLANS BOOK DATED MAY 2006.

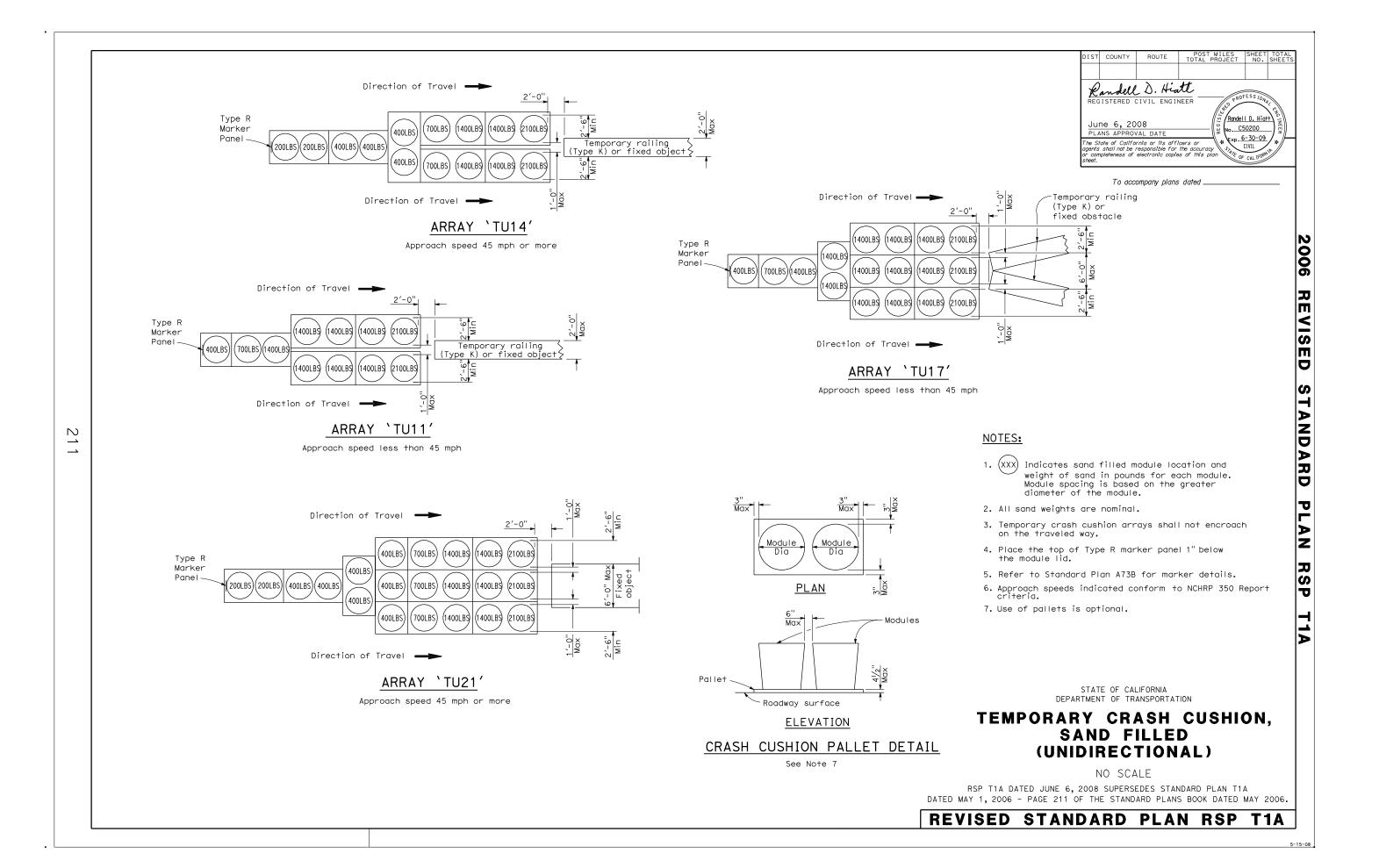
REVISED STANDARD PLAN RSP ES-4D

POLE PLATE For side mountings

SECTION A-A

Signal standard

Curved to fit standard



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T 1B

To accompany plans dated _

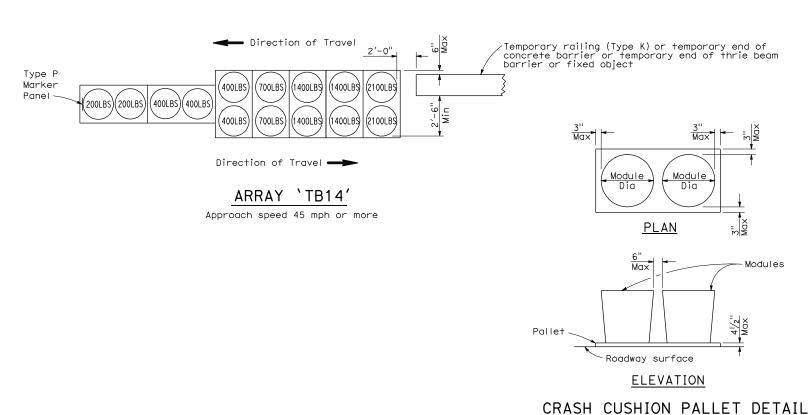
← Direction of Travel Temporary railing (Type K) or temporary end of concrete barrier or temporary end of thrie beam barrier or fixed object Type P Marker 400LBS (1400LBS) 1400LB\$)|(2100LB\$ Panel [400LBS)|(700LBS)(1400LBS . 1400LBS 1400LBS 1400LB\$ (2100LBS)

ARRAY 'TB11'

Direction of Travel

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Approach speed less than 45 mph



See Note 7

NOTES:

- (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
- 2. All sand weights are nominal.
- 3. Temporary crash cushion arrays shall not encroach on the traveled way.
- 4. Place the Type P marker panel so that the bottom of the panel rests upon the pallet.
- 5. Refer to Standard Plan A73B for marker details.
- 6. Approach speeds indicated conform to NCHRP 350 Report
- 7. Use of pallets is optional.

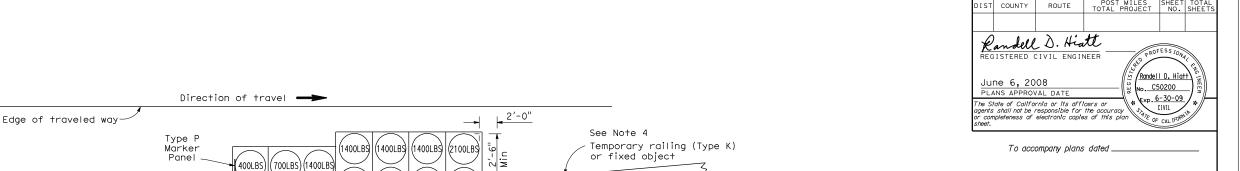
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY CRASH CUSHION, SAND FILLED (BIDIRECTIONAL)

NO SCALE

RSP T1B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1B DATED MAY 1, 2006 - PAGE 212 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP T1B



ARRAY 'TS11'

Edge of shoulder

W

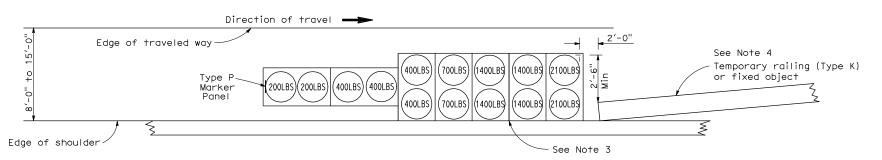
Approach speed less than 45 mph See Note 9

1400LBS

1400LBS

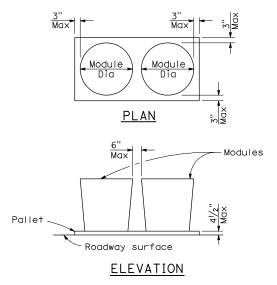
. 1400LBS 100LBS

See Note 3



ARRAY 'TS14'

Approach speed 45 mph or more See Note 9



CRASH CUSHION PALLET DETAIL

See Note 11

NOTES:

- 1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
- 2. All sand weights are nominal.
- 3. The temporary crash cushion arrays shown on this plan shall be used only in locations where there will be traffic on one side of the temporary crash cushion array.
- 4. If the fixed object or approach end of the temporary railing is less than 15'-0" from the edge of traveled way, a temporary crash cushion is required in a construction or work zone.
- 5. Temporary crash cushion arrays shall not encroach on the traveled way.
- 6. Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
- 7. Place the Type P marker panel so that the bottom of the panel rests upon the pallet and faces traffic.
- 8. Refer to Standard Plan A73B for marker details.
- 9. For shoulder widths less than 8'-0", appropriate approved crash cushion protection, other than sand filled modules, shall be provided at fixed objects and at approach ends of temporary railing. The specific type of crash cushion shall be as shown on the project plans or as specified in the Special Provisions, or if not shown on the project plans or specified in the Special Provisions, shall be as approved by the Engineer.
- 10. Approach speeds indicated conform to NCHRP 350 Report criteria.
- 11. Use of pallets is optional.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY CRASH CUSHION, SAND FILLED (SHOULDER INSTALLATIONS)

NO SCALE

RSP T2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T2 DATED MAY 1, 2006 - PAGE 213 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP T2